AVICULTURAL MAGAZINE

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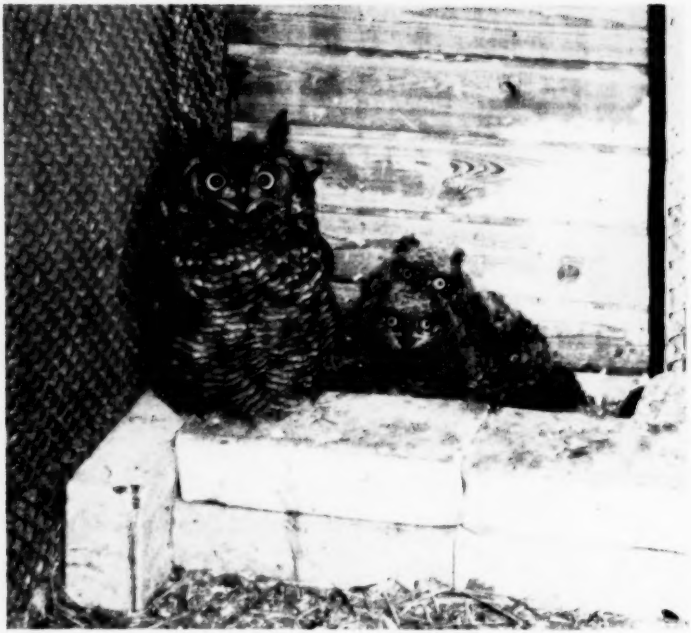

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Spotted Eagle-Owl, Mother and Young, 26th April.

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Spotted Eagle-Owl, Parents and Young, 8th June.

Frontispiece

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

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BREEDING THE SPOTTED EAGLE-OWL

(*Bubo africanus*)

C. AF ENEHJELM (Högholmens Djurgård, Helsingfors)

On the 29th December, 1959, our Zoo received a pair of Spotted Eagle-Owls in exchange from the Zoological Society of London. The birds were bred in Regent's Park the same year, and according to Mr. Yealland (*in litt.*) were hatched about the end of April.

The owls were put in an indoor flight measuring about 8 × 8 × 8 ft. in a big room where several species of owls and birds of prey are placed for the winter, a necessary precaution in our severe winter. The birds settled down nicely. They were mainly fed with rats, white mice, golden hamsters, and rabbit meat.

I was astonished to find an egg on the floor on 16th February. I erected a nest of bricks in a corner of the cage about 1 × 1 ft., laid some coarse hay in it and placed the egg, which was slightly damaged, in the nest—without much hope. Two further eggs were, however, laid in the nest, with a day's interval on 18th and 20th February. They then apparently started sitting regularly on 21st or 22nd February.

One young was hatched on 21st March, the second possibly late on the same day or on the following day. As I was anxious to breed this, to me, new species, I did not disturb the birds. The male by the way, was rather aggressive, so I left them well alone, only doing the most necessary cleaning. I hardly saw the young as long as they were small, as the hen sat very tightly.

On 26th April we succeeded in getting the first photo of the young and the hen, another photo was taken on 8th June, when the young were already flying quite well. A couple of weeks later the young were ringed and the family were turned into an outdoor flight, about 10 × 25 ft. and 20 feet high, where they are thriving well.

This breeding success was quite unexpected. The birds were only about 10 months old when they started nesting. I had previously bred

the European species (*Bubo bubo*) on several occasions, and as far as I can trace this species does not start breeding before 2–3 years old. Of course the European species is considerably larger—26–28 inches total length, as compared with the small African species, which is only about 17–18 inches total length. This smaller, tropical species apparently reaches maturity in a very much shorter time than the big northern birds.

* * *

THE BLUE-WINGED GRASS PARRAKEET

(*Neophema chrysostomus chrysostomus*)

By Dr. J. R. Hodges (Pinner, Middlesex, England)

All the members of the genus *Neophema* are highly desirable aviary birds and one of the most attractive is the Blue-winged Grass Parrakeet (*N. chrysostomus*). A description of this species usually provides an image of a bird very similar to the Elegant Parrakeet, more olive green and with more blue on the wings. However, no words can describe adequately the delicate shading of the greens, the wonderful intensity of the blue, or the magnificent emerald sheen on the upper part of the breast, which is seen so well when the bird is viewed in sunlight from above when it is feeding on the ground.

Before the war Blue-winged Grass Parrakeets could be obtained fairly readily, and they were bred occasionally in the aviaries of private individuals and fairly often at the Keston Foreign Bird Farm. However, by the end of the war the species had disappeared from British aviaries. In 1958 and again in 1959 a few pairs were imported from Australia. I was able to obtain in the spring of last year a pair from the second consignment. The cock was a nondescript specimen minus most of its tail feathers, but the hen was in perfect condition. However, the hen died only a few weeks after I had received the birds. A post-mortem examination showed quite clearly that death was due to crop binding. I was sorry that I had not diagnosed the trouble earlier, but I still do not know how it could have been avoided or treated effectively. The cock spent the remainder of the year with a pair of Bourke's Parrakeets in an aviary 11 feet by 3 feet. It became very tame indeed and would display and sing its rather squeaky and pathetic little song whenever I visited the aviary. When it was not displaying to me it centred its attention on the hen Bourke's in the same aviary or the hen of a pair of Elegants in the next compartment. It moulted in July and developed into a really magnificent specimen.

Blue-winged Grass Parrakeets were bred in 1959 by at least three different British aviculturists, although only one occasion was recorded

and then only briefly in a summary of breeding results in the aviaries of Sir Crawford McCullagh. In December one of the successful breeders let me have a hen, and so I was able to start 1960 with an adult imported cock and a young aviary-bred hen.

By the end of March it was obvious that the pair were anxious to breed. A nest-box 2 feet by 8 inches by 8 inches was placed in the open flight and about 4 inches of damp peat was stuffed into the bottom of the box. Almost immediately the hen entered the box and commenced spending hours every day throwing out most of the peat. Ultimately one egg appeared in the nest, followed by five more. The first three were laid on alternate days and the others on successive days. Incubation started with the appearance of the second egg. At this stage the previously attentive cock seemed to lose interest and was never seen feeding the hen on the nest. When next I had the opportunity to inspect the nest, exactly four weeks after the first egg had been laid, all the eggs had hatched. The hen spent most of the time away from the nest at the food containers, presumably because the cock provided no assistance in feeding her or the young birds. Six youngsters may have been too many for the hen to cope with alone, and the three youngest birds died when they were about a week old. The other three continued to thrive for about three weeks. Then one day both the parent birds seemed to become excessively active, flying incessantly to and from the entrance hole of the nest-box and calling to the youngsters. They were obviously trying to coax the babies out of the nest and ultimately two of the youngsters fell to the ground. I replaced them only to find them again on the aviary floor an hour or two later. I put them back again but became suspicious at the amount of noise the hen was making scuffling about inside the nest-box. When I looked in to see what had happened I found that she had tried to dispose of her offspring by burying them alive in the peat at the bottom of the nest-box. I rescued two of the young birds but the other had not survived its traumatic experience.

My attempts to hand-rear the two survivors were not successful. I placed them in a small box and for almost a week they appeared to do well on a sloppy mixture of "Farex" and "Ostermilk" which was administered by means of a hypodermic syringe without the needle. One morning the young birds did not come to the edge of the box for their feed as usual, and a few hours later they both died for reasons which I am unable to explain. On the previous evening they were very active and healthy, and while they were being fed they kept jumping out of their box and careering around the kitchen floor like clockwork toys.

Meanwhile the hen had produced another clutch of four eggs. They all hatched but two of the young birds died before they were a week old. The other two were reared uneventfully and are

both excellent specimens. Again, the male made no contribution towards the rearing of the youngsters either before or after they had left the nest. However, by the time the second brood had flown he had started to moult and was not interested in driving the hen to nest again.

The adult pair are kept, with a pair of Blue-faced Parrot Finches, in a small aviary 11 feet by 3 feet with a turved open flight, a covered flight, and an enclosed shelter which is *not* heated in the winter. They are fed on budgerigar mixture, sunflower seed and a little hemp. They are given fresh green food, seeding grasses and millet sprays as often as possible.

Apparently some other breeders have been successful with Blue-wings this year. With luck, this attractive species may be re-established as an aviary bird in this country.

* * *

BREEDING OF BLUE-WINGED GRASS PARRAKEETS

(*Neophema chrysostomus chrysostomus*)

By Mrs. O. L. GENT (Berkhamsted, Herts, England)

I purchased a pair of Blue-winged Grass Parrakeets in the Autumn of 1958. They were kept in a large stock cage until June, 1959, when they were put into an aviary with an open wire front, with a pair of Waxwings.

The staple diet for the Parrakeets was canary, panicum, millet, wild seeds with plenty of millet sprays, but they were very fond of the currants and "Sluis" provided for the Waxwings. The four birds agreed very well together.

A nest-box made from a piece of apple-tree trunk was placed in a corner, but the hen took no notice of it at all, so at the beginning of April this year we put in one of a different type and within an hour she had gone into the original box and about 15th April the first egg was laid. The cock bird was very attentive and fed her regularly.

About the beginning of June I was rather anxious because I had seen nothing of her for three days, so although it was a risky job I took the nest-box down to inspect it and to my amazement there were nine eggs at the bottom (a tenth egg had been laid in the flight); one of the eggs was cracked so it was removed.

The box was replaced and in about an hour she returned to the nest and the next day, 5th June, we heard a very faint chirping; as the days went by the chirpings became very much louder. They were fed on canary, panicum, millet, wild seeds, seeding grasses,

soaked millet spray, and dry millet spray, chickweed, hemp, and sunflower, quite a varied diet I think.

About three weeks later I could not resist trying to find out how many chicks there were, so I put my hand in the nest and could distinctly feel six heads.

The 1st chick came out at thirty days, the 2nd one the next day, three days went by and nos. 3, 4, 5 came out the three following days, and the last chick joined his mates on 15th July. They are fine healthy chicks all feet perfect and beautifully feathered, with the back and upper chest olive green, lower abdomen yellow, blue wing tips, and a faint blue band over the beak, tail feathers yellow and blue. They are all feeding themselves, but the baby likes father to feed him sometimes. The adult birds certainly have been wonderful parents, so patient and no quarrels whatever.

* * *

SOME NOTES ON MY BIRDS DURING THE SUMMER OF 1959

By Dr. J. NICOLAI (Seewiesen, Upper Bavaria, Germany)

During the summer of 1959 it was exceptionally hot in north and central Germany, and in the Alps and Upper Bavaria alternated from warm summer weather to cold spells and rain. The Max-Planck Institute, Seewiesen is by a forest lake 700 m. high in the Lower Alps and here every period of bad weather was followed by a sharp drop in temperature. In May, and also in June and July, we had periods of ten to fourteen days of continual rain with such intense cold that the work-rooms and living-rooms of the Institute, and also the inside compartments of the aviaries, had to be heated. This changeable weather very seriously affected the breeding urge and breeding results of all delicate species of birds. Many pairs such as the Cape Canary, Brown-rumped Seed-eater (*Poliospiza tristriata*), wild Canary, Chinese Greenfinch, Purple Finch, Red-hooded Siskin and Chinese Rubythroat made no attempt to breed. A pair of Rufous-bellied Niltavas twice made an almost complete nest in a crevice, but on both occasions were diverted from their purpose by a sudden drop in temperature and did not lay eggs. A pair of Black-cheeked Waxbills and one of the two pairs of Violet-eared Waxbills also behaved in the same way. As his mate took no interest in the nest the cock of the latter pair took possession of the nest of a Golden-breasted Waxbill and brooded the eggs for several days in spite of the protests of the rightful owner.

My old pair of Indian White-Eyes nested, as in the previous year, and had an infertile clutch which they ardently brooded. The female of this pair was imported early in the spring of 1954 and is already too old for successful breeding. Yellow-rumped Seed-eaters, Mexican Siskins and Alario Finches also produced several infertile clutches.

But in spite of these disasters, which in the main were due to the changeable weather, I can nevertheless also report a number of successes. Three pairs of Galapagos Doves hatched twenty-three young, twenty of which were reared. My old pair of Mourning Doves, which had five young in the year 1957–58, hatched eleven young last year all of which grew into beautiful birds. Further breeding successes were : twenty-six Diamond Doves, two Bourke's Parrakeets, ten Painted Quail, two St Helena Seed-eaters, one Black-headed Siskin, four Parson Finches, four Fire Finches and five Striated Finches. My colony of Sociable Weavers (*Philetairus socius*), which reared their first young in December, 1958, doubled in numbers in the spring, when fifteen further young birds were reared by seven pairs.

Late in October a pair of Eritrea Seed-eaters (*Ochrospiza atrogularis xanthopygius*) in the outside aviary bred and brought up two young. On account of the cold weather, shortly before they flew, they were placed with their parents in a heated bird-room, where they were still fed till they reached independence. This little grey, yellow-bellied Seed-eater, which was first imported into Germany in December, 1958, is so very distinct in voice and behaviour from the two sub-species (*atrogularis* and *deserti*) of the Angola Seed-eater (*Ochrospiza atrogularis*) which I have kept for years, that they are unquestionably not sub-species but represent " good " species of their own.

The summer of 1959 was the fifth for a free-flying Shama hen. From April to November the bird flew out of an open window on the first floor, over the balcony and into the open where it particularly liked to stay in a nearby group of bushes. Several times a day it returned to its cage in the room to eat fresh ants' pupae which always remained the greatest tit-bit, which is the case with all my free-flying Shamas, in spite of the wide choice of food outside. Although through these years the hen was always accompanied by a male, which sang and displayed with great intensity—she was not the slightest interested in the nest-box indicated by him so no laying or even nest-building resulted. Some years ago I repeatedly reared Shamas in a cage 1 metre long.

Some new acquisitions to my bird collection are Green-backed Twinspot (*Mandingoa nitidula schlegeli*), Mongolian Lark, two pairs of Crested Bronze-winged Pigeons, a pair of Nicobar Pigeons as well as two cocks of the Grey-headed Quail Dove (*Geotrygon caniceps*) from Cuba. The last named were offered to me as a pair, but soon proved to be two cocks, which ceaselessly displayed and reciprocally mated.

Unfortunately it would be almost impossible to find here a hen of this extraordinarily interesting species, which is nearly extinct in its native habitat in Cuba.

* * *

BREEDING THE AURORA FINCH

(*Pytilia phoenicoptera emini*)

By Sir RICHARD COTTERELL, Bt. (Hereford, England)

I had always wished to keep and breed this attractive little bird, also known as the Crimson-winged Waxbill or *Pytilia*, but the opportunity did not arise until last year—1959.

It seems to have all the qualities which make it highly desirable as an aviary bird. It is beautiful to look at ; it is easy to feed ; it appears to be a free breeder ; it can become quite tame, and last, but not least, when acclimatized it is hardy.

Description.—Adult male, general colour dark grey ; outer edges of flight feathers, upper wing-coverts, lower rump, upper tail-coverts, central tail feathers and outer edges of rest of tail feathers crimson ; breast to under tail-coverts barred with white ; eye red ; bill black. The female is browner above and below, and the crimson on the wings and tail-coverts not quite so bright. Wing 56–59 mm.

There is another race *P. p. lineata* from Abyssinia which differs in having the eye brown and the bill red.

Range.—The semi arid belt from Senegal to Northern Nigeria and eastwards to the valley of the Upper White Nile, Bahr el Ghazal, and Uganda. Roughly speaking between 5 degrees and 15 degrees north of the Equator.

Habits.—Little has been written about this bird's wild life. It does not appear ever to be found in large flocks, but usually singly or in pairs. It frequents open woodland, orchard bush, and park land and is considered to be more arboreal in its habits than most other Waxbills. Dr. W. Serle records finding nests in Northern Nigeria in November, December, and February—the dry season. In all cases the nests were within easy reach of the ground, were globular in shape and made of grass tops, lined with feathers.

I obtained a pair of Auroras about the middle of April, 1959. One was an obvious male in adult plumage, the other was an immature bird and of doubtful sex. They were placed in a large flight cage with three pairs of Ethiopian Cordon-Bleus with whom they agreed very well. Panicum millet formed their staple diet, though they also ate considerable quantities of small Turkish canary seed :—they appeared to take no interest in white millet. They soon took to mealworms, of which they had a few per day, and in fact became almost finger tame.

The cock bird frequently burst into song—if it can be called a song ! Although delivered with great enthusiasm it resembled more the guttural creakings of some small unoiled machine. To my dismay the other bird also began to sing and I thought, therefore, that it also must be a cock. This, however, proved not to be so. It therefore appears that both sexes can sing.

They remained in the flight-cage until my new aviaries were ready early in June, by which time the hen had completely moulted into adult plumage. There is no difficulty in sexing adult birds if they can be seen together. Whereas the cock is a bright pearly-grey with no trace of brown, the hen is a brownish-grey and the crimson on the wings and tail-coverts is slightly less bright than the cock.

On 13th June, in company with a pair of Dufresne's Waxbills, they were turned into one of the new breeding aviaries, the dimensions of which are as follows :—

Shelter house—6 feet long, 4 feet wide, 6 feet 6 inches high, attached to a planted outside flight of the same width and height but 12 feet long.

The shelter was fitted up with many twiggy branches and half a dozen wicker finch nests. They were shut in the shelter for two days before being allowed to find their way into the outside flight via the hatch.

On 23rd June, I found the cock building between some twigs against the roof of the shelter, and under the nest on the floor was one egg and another broken one.

On 27th June, the nest was completed, contained eggs, and the birds began sitting alternately. The nest was built entirely of grass stems and was a rotten little affair ; I could almost see through the bottom of it and it looked incapable of supporting the weight of the parent bird, let alone any young ones.

On 10th July, I took a chance and put my finger in the nest, and felt young ones. I immediately began feeding meadow-ant cocoons on the ground in the open flight. They were taken avidly by the parents and, in fact, they became quite tame and picked them up all round my feet.

Up to 17th July, one parent was in the nest the whole time. On this day both parents were sitting outside, and I thought they must have deserted. I resisted the temptation of looking in the nest for another four days, then by means of a small mirror, I saw one young one which appeared to be alive.

On 27th July no sign of life came from the nest so I felt inside and found it empty. I then rather inadvisably pulled it down and found nothing except a piece of twisted up cellophane ! (I understand that some waxbills do use pieces of old snake skin in their nest—had they mistaken the cellophane for this ?) I, therefore, looked inside and out, and eventually found one young bird crouching on the ground of

the flight, and I immediately caught it up and put it in the shelter.

The young bird was about half the size of the adults, mousey-brown on the back and lighter underneath with no trace of barring ; the tail very short and carried rather high like our English Wren : the crimson of the adult is replaced by rusty-red ; two conspicuous white nodules at the base of the beak, and eyes black.

The young bird soon found its way into the flight again and nine days after leaving the nest, although still being fed by its parents, was beginning to pick up ants' cocoons on its own.

The same day I noticed that the cock was building again in one of the wicker nest-baskets. I threw in a handful of pigeon feathers to assist. Within two days these had all disappeared and the cock flew out of the nest—incubation having started. The young hatched fourteen days later.

Owing to the dry summer and the tiresome life cycle of the meadow-ant, it became impossible to continue to collect sufficient cocoons. I, therefore, tried them with grasshoppers, but I soon abandoned the hot pursuit of the individual grasshoppers as being unsuitable to my dignity and temper, and fell back on the homely mealworm. Two young left the nest eighteen and twenty-one days after hatching.

Within another nine days the hen was sitting on three eggs in another nest ; two young left the nest thirty-four days later.

Eleven days later, 5th November, the old birds were sitting on eggs again, but nothing came of this nest.

To revert to the young birds, they all began moulting into their adult plumage one month after leaving the nest, and in the case of the first two broods, this moult was completed in a month. Of the last brood (fledged 24th October) one died and the other was still in moult at the beginning of March, 1960—the slowness no doubt due to the cold weather.

Owing to the difficulty of knowing for certain when the young were self-supporting, and the fear of disturbing the old birds on their nest, I never removed any of the young from the breeding aviary at all. They all seemed to get on very well and there was no bullying.

By 20th December I had got some heating installed in a shelter of a large aviary and so I transferred the whole Aurora clan there together with all other breeding waxbills, trusting that lack of privacy would stop them breeding and the old birds would get some rest.

In conclusion, I would like to mention some miscellaneous points about Auroras which may not be clear from the narrative. Also, this paragraph is added some months after writing the original, so a little further information is available. It must be emphasized, however, that this is written from a limited experience of keeping this species for little over one year.

Auroras appear to " keep themselves to themselves " and I have

never seen them show any aggressive signs to weaker or smaller species. In fact, this year (1960), a pair were forced to abandon their young, as a pair of Dufresne's Waxbills decided to make their nest against the Auroras' basket, and " saw them off " whenever they approached.

As regards food, it would seem that live insect food is a necessity when rearing young. Undoubtedly they do not rear their young wholly on live food, but on regurgitated seed as well. The amount of mealworms given, about six morning and evening, would not be sufficient in itself. But they must have some live food. This is borne out in the case of another pair which went to nest after the ant cocoon season, and who would not take mealworms, and thus failed to rear two nests. It would be a good thing to train the birds to take mealworms before putting them up to breed so that there is something to fall back on if other insect food fails—gentles would probably do just as well—if not better, but they are so unpleasant to handle.

Nesting.—After the nest has been begun, it seems that nest building and laying go on concurrently. I suspect that the normal clutch is about four eggs—white like all waxbills. The cock and hen definitely incubate alternately, the incubation period is fourteen days and the young leave the nest approximately eighteen days after hatching. As all members of the Estrildinae, they do not attempt to keep the nest free of droppings. My birds invariably went to nest again about ten days after the young had fledged, and appeared to do this *ad infinitum*,—whether this perpetual motion is kept up in the wild state I do not know.

This year so far (August, 1960), in spite of numerous nests, I have not succeeded in rearing any young. This may be due to not feeding ant cocoons, or to the exceptionally favourable summer last year for breeding a " dry weather " bird.

Finally, I think perhaps I was a little too optimistic in my opinion of the Aurora Finchs' hardiness. During the winter the temperature in the aviary shelter did not go below 45° Fahrenheit, and with one exception they all survived, although in the coldest and wettest time they did not look too happy. The heroine of our narrative died in February when I was away—this may have been due to exhaustion caused by her breeding activities during the previous six months, or to egg binding (to which they are very prone in the cold weather), in an effort to continue to raise a race of home-bred Auroras.

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* * *

BAIKAL TEAL

(*Anas formosa*)

By JOHN WILCOCK (Derby, England)

This lovely little duck is hardy, a " good doer ", and yet as we all know, the records of successful breeding results are very few. Delacour writes " Next to the Brant, it is the waterfowl that is the least inclined to lay in confinement, even on large lakes. It would be interesting to find out the cause of such an inhibition ".

Last year I obtained a pair. Early in May there was a change from their rather quiet and retiring disposition ; the drake became vociferous, particularly in the evening, calling regularly, " ot, ot," with bobbing up and down of the head, which the duck acknowledged also with a slight bobbing of the head. Every evening they became very restless. I noted they would both stand with neck outstretched looking skywards, the drake behind the duck, she making little flicks with her wings, sometimes slightly crouching, exactly like a bird scenting danger, and making ready to fly off. Actual attempts at flying were soon regularly made, generally from the bank of a small island, only of course to fall into the water. The pair would then swim across to the bank of the pond, run quickly anything up to 30 yards into the field, then more sky-gazing, another attempt at flight, and race back to the pond. This was never observed during the daytime, but was the regular evening performance from about an hour before dusk until well into the darkness. It continued from early May until mid-June. Towards the end of May coition took place. There was no solicitation attitude by the duck prior to this, who seemed completely passive, and no egg was laid.

Little seems to be known of the breeding biology in the wild, but it would seem that one thing is clear, with the most rudimentary display on the water, these birds are possessed of a strong and persistent urge to nuptial flighting in the evening. Examples of this aerial display are of course common over a wide range of birds in the spring, the song flights of Skylark and Tree-Pipit, the drumming Snipe, the roding Woodcock, the fluttering butterfly flight of Dunlin, and the Nightjar, with the smacking of wings over the back. Hudson, in his *Birds of La Plata*, describes the soaring of the Crested Screamer, and the whistling communal flights of the Chiloe Wigeon. These flights are not just a matter of *joie de vivre* alone. They are, of course, a link in the chain leading to the climax of the breeding cycle, and are the means of co-ordinating the organic rhythms of the pair. With the pair under observation, the drake had reached the stage of being ready to pair but, without the stimulation of the aerial chase, the duck had not.

Individual ducks which have bred despite the lack, through pinioning, of the nuptial display have been sufficiently highly sexed to jump the gap, so to speak, and it is to such and their progeny that we must look for a captive-bred race or strain of *Anas formosa* if we are to get one.

To sum up, many birds, over a wide range of families, require a period of nuptial flight or aerial display in the spring, in order to co-ordinate the breeding rhythm of the pair and bring the female to the physiological condition of successful ovulation. Close observation almost every evening convinced me that when more is known of the Baikal Teal, it will be found to be such a bird. Pinioning frustrates this, therefore there are no eggs.

* * *

BREEDING OF THE REDWING

(*Turdus musicus*)

By H. MURRAY (Brentwood, Essex, England)

I obtained my pair of Redwings seven or eight years ago, and they have lived in my large flight ever since. Their condition has always been perfect and their food consisted of maggots, mealworms, and whatever they could find to eat in the aviary. Soft food of any sort was ignored and I never saw them eat fruit.

Every spring up to last year they played at nesting, but never made a serious attempt to breed, nor, as far as I know, was an egg ever laid.

Last year their habits suddenly changed and they built a nest, laid, incubated, and reared their young to about a week old, then something threw them out of the nest. There were a large number of other birds with them, but I suspect that it was the cock bird that did the damage. Three times this happened.

I know perfectly well that I should have removed the cock and left the hen to rear, but I have never reared a worthwhile bird by this method, and I have often known the cock to cease his misbehaving and to settle down properly.

This year I again took a chance and left the cock bird with the hen and they reared one very nice youngster. When sitting, the hen is a devoted mother and broods the youngsters nearly all the time, even when the temperature is very high and the youngsters are obviously suffering from the heat. In the first few days the cock seems to do all the feeding and the hen hardly stirs.

The nest is a typical thrush's nest, built of dry grass and roughly lined with mud. The eggs are rather similar to the egg of a Blackbird. Once the bird starts to build, the work progresses very rapidly and the nest is built in a day. Usually four eggs are laid.

The young were fed on maggots and mealworms, but earthworms

were not much used. However, the parents were constantly searching and obviously the young are largely fed on some food that I could not provide.

This year the birds did not start to nest until July and the eggs took two weeks to hatch.

The plumage of the young is more speckled than in a Song Thrush and the white eye streak is clearly marked. The patches of reddish colour on the sides of the breast are also clearly visible.

* * *

As described, H. Murray has bred the Redwing (*Turdus musicus*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

THE BREEDING OF THE BLUE-HEADED ROCK THRUSH

(*Monticola cinchoryncha* (Vigors))

By Mrs. K. M. Scamell. (Newdigate, Surrey, England)

The Avicultural Magazine of October, 1913, published an article by the Rev. H. D. Astley on this beautiful Rock Thrush and illustrated it with a coloured print from a painting by H. Goodchild, which depicts the cock displaying to the hen. The Rev. Astley then possessed two males and one female, unfortunately losing the latter a few months later.

According to Salim Ali, in *Indian Hill Birds*, Blue-headed Rock Thrushes breed throughout the Himalayas between 4,000 and 9,000 feet elevations. In winter the species is stated to visit all India—both plains and hills—and west to Central Burma. It is said to frequent openly forested hillsides in summer, and in winter broken and stony ground and hillsides with light deciduous forest. It is seldom found amongst dense evergreens. No mention of the bird is made in the May 1935 edition of the *Popular Handbook of Indian Birds* (H. Whistler) but in *Breeding Birds of Kashmir* (R. S. P. Bates and E. H. N. Lowther) they are described as a not uncommon species of pine woods and mixed forests mainly from 6,000 to 9,000 feet, but never found in open country. From this we can see that Blue-headed Rock Thrushes are hardy though I have never attempted to winter them outside, preferring to cage our pair separately in a birdhouse with a minimum temperature of 50° F.

These birds are imported only occasionally, the cock much more

frequently than the hen—this is understandable when one considers the great differences between the sexes, the male having a bright blue head, chin and throat, with the back and tail deep blue. The mantle, rump and front are chestnut. A very conspicuous white patch midway across each wing is visible at all times. The female is mainly brown above, whitish below, with the underparts scaled as each light feather is tipped dark brown. The first cock of this species I recall seeing was shown by Mr. Dulanty at the 1949 National when it was placed second to his own Superb Spreo Starlings.

In January 1958 we purchased a young cock and in the spring turned it out in a large planted aviary with a mixed collection of seedeaters and larger softbills. Early in 1959 we were fortunate in obtaining a hen, and in May 1959 both birds were placed in a small planted aviary about 9 feet long by 3 feet wide and 6 feet high, fitted with a small shelter high up at one end but terminating 3 feet from the ground. A number of large rocks were placed on the turf which later sprouted quite a few ferns. Like most of our aviaries, this one was in a small wood of silver birch and overgrown cob-nut, but the dry hot summer did not seem to suit the birds who made no attempt to breed until September, when the cock was observed displaying and carrying leaves. The hen was very rough and wild, the cock quite tame. After moulting we showed the pair at the December 1959 National in the same cage. The pair were placed first in their class but throughout the show the hen seemed nervous of the cock, and when my husband was feeding the birds on the second day of the show it escaped through a feed hole and spent the next 30 hours flying about Olympia. However, it never strayed very far from its mate, and after many attempts to catch it by many people with nets, it was finally caught by hand by Raymond Sawyer just before the show closed, and returned to me minus its tail but none the worse for its escapade ! It is amazing what attraction an escaped bird at Olympia had to visitors, many of whom spent more time gazing upwards at our hen than they spent viewing the exhibition !

After this we caged the pair separately until late April 1960, when we turned the hen out in the same aviary as the previous year but this time with a pair of Himalayan Goldfinches and a pair of Red-crested Finches. Three half-open fronted nest boxes were placed high up about the small aviary and one half-open fronted box facing south, but under the overhang of the small shelter referred to above. We placed the cock in the aviary a week later and much less sparring took place this year, with the hen holding its own much better and getting a fair share of the twice daily distribution of mealworms. Leaf carrying and displaying by the cock started in a few weeks, the hen choosing the nest box beneath the overhang of the shelter. One could just see her head during incubation, which she carried out alone.

We did not examine the eggs—nor did we find any egg-shells—the hen sat very closely and was rarely seen off the nest. We think she laid about 15th June. On the morning of 2nd July both the cock and hen were flying about in an excited manner and all live food, i.e. a normally adequate supply of gentles, given late the previous evening, had disappeared. A quick check of the nest (our first) showed there were three youngsters, possibly two days old. The nest was cup shaped and at one end of the nest box. Throughout the next two days I fed mealworms at two-hourly intervals, plus fresh ant eggs in addition to the usual gentles and soft food. On Mr. K. Norris's advice I fed mealworms *ad lib.* from the evening of 3rd July until the young left the nest in a thunderstorm on Thursday afternoon, 14th July. I also added chopped hard boiled egg to the soft food. Though I returned the young to the nest as fast as they came out, they were soaking wet and covered in mud. One stayed put and left the nest for good the next day, but two spent the night in the flight. A few buckets of granulated peat dried up conditions somewhat but the continual downpours throughout July caused considerable anxiety.

Late on the 14th July I found the cock Himalayan Goldfinch decapitated. The pair of Red-crested Finches which are highly insectivorous and the surviving hen Goldfinch were always the first to feed when the supplies of live food were replenished but, as far as we could see, these three birds were never interfered with by the Rock Thrushes at any time.

Of the three young, two are hens and the third was definitely a cock. The two young hens are paler editions of the mother, dull brown wings but with the head and back speckled and the extensive speckled lighter parts underneath a dull fawnish-white rather than the distinctive light colour the parent carries. The young cock, however, showed blue wings and the tip of his short tail also blue, and the rump chestnut. The remainder of the bird was speckled and barred like the hens but much darker and with the lighter parts distinctly fawny. On the third day after leaving the nest, the young cock started to show the white patches on the wings.

Both parents fed the gaping youngsters—sometimes one would see the cock with a bill full of mealworms or gentles, in fact a row of them, ready to thrust down a waiting throat. The mealworm consumption at its peak, which was just before the youngsters left the nest, reached about 3 oz. a day and for the next fortnight did not fall below 2 oz. a day. On the 26th and 27th July both young hens were observed taking mealworms from the parent cock's bill and one accepted a mealworm from my fingers. The male parent seemed to take the larger part in feeding the birds but as the hen has always been shy, she may not have fed so freely in my presence. The young cock was not progressing as well as its sisters, who were now flying strongly. It was smaller and

seemed weak and neglected and on the afternoon of the 27th July, after an exceptionally heavy downpour, I picked it up in a puddle. It was dead—whether drowned or starved I could not say. On the 28th July the two young hens were observed picking up mealworms from the floor. The male parent was seen scattering mealworms and gentles on the ground. At this point I started to cut up the mealworms and mix thoroughly with the soft food. Throughout the rearing period I fed fresh ant eggs whenever I could get a supply, which involved lifting all the paving slabs on our garden paths and scooping up the ant eggs with a teaspoon ! Fresh ant eggs had also to be supplied to two other softbill families which overlapped this breeding. The soft food consumption rose as I reduced the mealworm supply on 2nd August. From now on, rearing was uneventful, the two young gradually fending for themselves until on Saturday, 13th August, I was satisfied they could feed themselves. I then caught them up and caged them together, but one hen seemed stronger and in better condition than the other, so I separated them and today, 22nd August, they are both fit and eating well—soft food, gentles, plus four mealworms each, twice daily. They are almost as large as their mother but still duller in the lighter parts. The parents have started to moult —the hen looked very bedraggled during the later stages of the feeding but is now in better condition.

* * *

As described, Mrs. K. M. Scamell has bred the Blue-headed Rock Thrush (*Monticola cinchoryncha*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

BREEDING OF THE PRETTY WARBLING FINCH

(*Poospiza ornata*)

By W. D. CUMMINGS (Keston, Kent, England)

We first kept this species about three years ago at the same time as we bred the Chestnut-and-Black Warbling Finch, which was also a first breeding in this country. The pair of Pretty Warbling Finches we then had went to nest, building a small cup-shaped nest in a tangle of branches and Old Man's Beard which we had fixed up in a corner of the flight under overhead cover. Unfortunately they, like all the Warbling Finches, are inclined to be spiteful, and the cock would chivvy the hen whenever she came off the nest and eventually killed her before the eggs hatched. At first we were not sure whether we had a pair as both birds seemed to be identical. But in our present pair the hen is of a distinctly paler chestnut than the cock, though otherwise they are alike.

The cock is deep chestnut on the breast, paler on the back, and with a strong white stripe through the eye, and white bars across the wings. This somehow reminds one of the English Chaffinch and they also resemble the latter in body shape and flight, but are much smaller. Their eggs are white spotted with fine black dots, mostly on the large end. Our present hen we managed to procure from another source and we were told that she had nested before, but had let the young die in the nest. We mated her to a fine, brightly coloured cock which arrived at about the same time in a consignment of other birds from the Continent.

We kept them over the winter and gave them a small aviary to themselves in the spring. The hen went straight to nest and built in the same sort of thicket as we had provided before. She hatched and reared one youngster in the first round, and as it jumped out of the nest very early before being able to fly, we put it in the shelter, where it was dryer. At first we thought it had been disturbed, but apparently since the two young of the second nest have done the same thing, this would appear to be the usual procedure with this species.

The first young one is now self-supporting and thriving and has been taken away from its parents, and the other two are also flourishing and just beginning to fly. The young differ a little from the adults, being greyish-brown and having the breast pale fawn-grey marked with thrush-like striations. The latter, however, very soon disappear and the young one of the first round already has the breast mainly chestnut.

The normal diet of the Warbling Finches includes seed, but the young were reared entirely, as far as we could see, on live food consisting of gentles and a few mealworms daily.

The song of cock Warbling Finches resembles those of the English warblers, that of the Pretty Warbling Finch being a quieter edition of the Chiffchaff's song.

The Warbling Finches come from South America and it is a pity they are not better known to aviculturists, as they make charming aviary birds.

* * *

As described above, W. D. Cummings has bred the Pretty Warbling Finch (*Poospiza ornata*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

BREEDING OF AFRICAN RING-NECKED PARRAKEET

(*Psittacula krameri krameri*)

By T. F. Nixon (Wisbech, Cambridgeshire, England)

Owing to a May holiday and other factors, I cannot give a very detailed account of the breeding of the African Ring-necked (*Psittacula krameri krameri*).

I bought the pair in 1957 from a dealer for the paradoxical reason they looked in such a pitiful condition, their flight and tail feathers had been hacked off almost to a degree of permanent mutilation, and were very dirty; it took two years before they regained their full plumage. Not until this year did they go near the nest-box (about 24 by 10 by 10 inches) standing on a 4-foot post, with some 4 inches of granulated peat in the bottom.

Early this spring they started to chew the roof of the box, although I never saw them near it. One day at the beginning of April, the hen came out of the nest-box when I opened the flight door to feed them, but she did not go back while I watched, she usually came out when anyone approached the run. I believe she came off the nest most evenings. The cock always spent the night with the hen, entering the nest-box about an hour before sunset, after which no amount of noise seemed to distract them.

Before going on holiday at the beginning of May, I decided to open the box when the hen was off, to see if any eggs had been laid; to my intense surprise there were three strong chicks, one dead badly needing removal, and one clear egg.

Up to now the parents had only accepted sunflower and canary seed, no fruit or green stuff would they look at. I believe they lived

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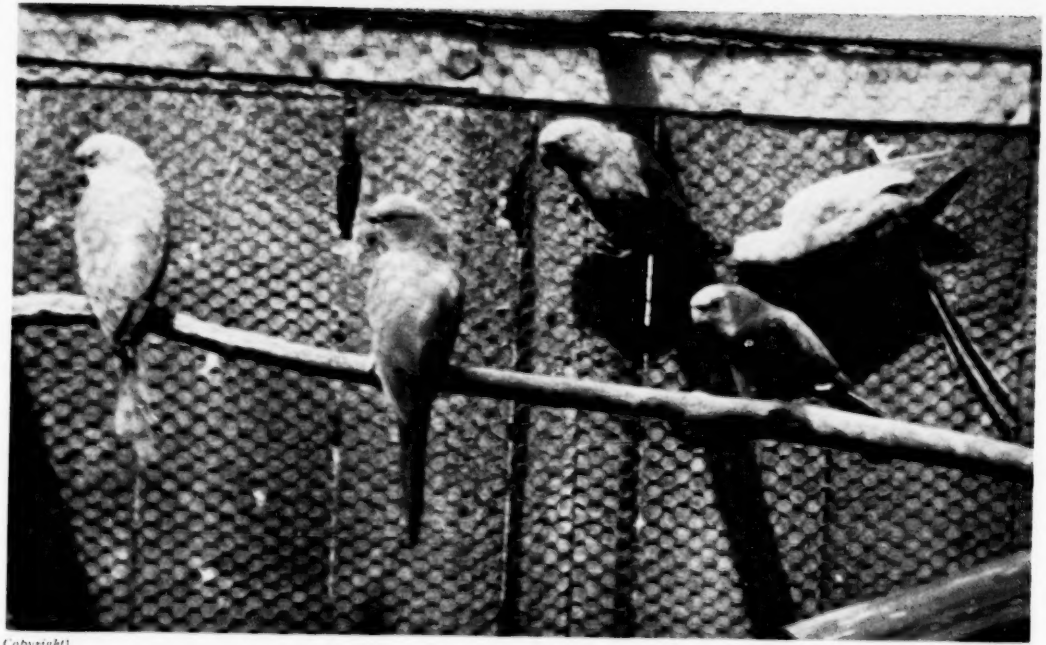
PRETTY WARBLING FINCH AND YOUNG.

[Alec Brookshank



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[*T. F. Nixon*

African Ring-necked Parrakeets and Three Young.

To face p. 173]

solely on sunflower and only touched canary when the former had been cleared up. I immediately offered them a mixed diet, but they would only take one sweet apple a day and plenty of sunflower seed.

The first youngsters came out about the first week in June and the other two at four- to five-day intervals, nearly as large as their parents except there were no tail feathers; these grew fairly rapidly once they were flying.

The most noticeable feature is the beak, on leaving the nest it was a very pale coral pink which turned to bright red and is now slowly developing into the characteristic blackish red.

Since the young left the nest, the parents have returned to their usual perch under a small shelter and the hen is very unfriendly to the cock, which was not so before the family arrived.

In the photograph the three young are on the perch with the parents on the partition, the different ages of the youngsters can be distinguished by the shade of their beaks.

* * *

As described, T. F. Nixon has bred the African Ring-necked Parrakeet (*Psittacula krameri krameri*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

OBSERVATIONS ON AVADAVATS AND GOLDEN-BREASTED WAXBILLS

By Derek Goodwin

Introduction

These notes are based on the behaviour of only a few captive individuals. I think, however, that they may be of interest, since such other accounts of the behaviour of these species that I have seen have been based on equally, or even more, limited material. The best and most recent paper on the ethology of these and some other estrildines that I have read is that of Kunkel (1959). I shall therefore give special emphasis to points not dealt with by him or where our observations do not completely tally. It is to be hoped, though in view of the political situation hardly to be expected, that behaviour studies of these and other estrildines in the wild will soon be undertaken to complement observations on captive birds.

The Avadavat, Tiger Finch, Strawberry Finch, or Red Waxbill (*Amandava amandava*) is found in India and parts of south-east Asia, normally in damp areas with reeds, tall grasses or similar cover. It is probably familiar to most readers since it is commonly on sale, often under deplorable conditions, especially where the birds are intended rather to draw customers for other goods to the establishment (such as shops whose main trade is dog food and budgie seed and the " pet departments " of some large stores) than to be profitably sold themselves. I will, however, describe it for the benefit of anyone who does not know it. It is a little bird, about the size of a Wren and differs from all other estrildines in having a breeding and a non-breeding plumage. In the former the male is coppery red to bright crimson red (there is some geographical and individual variation) with blackish ventral regions, dark brown wings and tail and reddish brown crown and back. Glistening white spots on his lower breast, flanks, wings and rump add to his beauty. The female is dark brown, paler beneath, inclining to golden-yellow on the belly, with some red on the rump and upper tail coverts and white spots on the wings. In non-breeding dress the male resembles her but the red on his rump is always brighter and more extensive. The young are much like the female but have no red on the rump and instead of white spots they have buff edges to their wing coverts which form buff bars across the folded wing.

There are three races of this bird, the Indian or " Bombay Avadavat " (*Amandava a. amandava*), the smaller and usually brighter and less heavily spotted *Amandava a. punicea* from Indo China and Java, to which some (but, be warned ! not all) dealers restrict the name " Strawberry Finch ", and the very beautiful Golden-bellied Avadavat

(*Amandava a. flavidiventris*) of Burma and some of the south-east Asian islands which seems not to be imported into Britain. Delacour (1935) gives a detailed account of all these races and their distribution, although his descriptions and the accompanying colour plate rather over-emphasise, in my opinion, the differences between *amandava* and *punicea*.

When kept in cages, particularly when they are closely confined and fed only on seed, Avadavats lose their red colour, which is either replaced by a coppery yellow-brown or else the birds become more or less black all over. One of our members (Davis, 1939) found that, at least in India, exposure to sunshine, heat and moisture caused the red colour to be retained even when the birds were fed only on dry seed. But I think anyone would be ill-advised to hope for good colour or good health in Avadavats on such a spartan diet in our less (to them) favourable climate. When kept in a large outdoor aviary my old cock bird moulted into a slightly duller and more coppery red than his vivid wild plumage. His son, bred and kept indoors (see further on for details) moulted into coppery orange-red with vivid fire-orange on the rump different from, but almost as beautiful, as the colours of a wild bird. The old cock, now (20th August 1960) half through his moult, is coming into the same colour as his offspring.

The Golden-breasted Waxbill or Zebra Waxbill (*Amandava*, formerly *Estrilda*, *subflava*) is now placed in the genus *Amandava* together with the Avadavat and the Green Munia, Green Avadavat or Green Waxbill (*Amandava*, formerly *Stictospiza*, *formosa*). Delacour gives *Amandava* only subgeneric rank (Delacour, 1943) within his enlarged conception of the genus *Estrilda*, a decision which seems to have much to recommend it but has not been followed by later classifiers. The Gold-breast and the Avadavat are almost certainly fairly closely related although both Kunkel and I are of the opinion that they are probably less closely akin to one another than are the blue waxbills, typical waxbills and firefinches, which are usually put in separate genera from each other even by those who put the Gold-breast and Avadavat together in *Amandava*. The Gold-breast is found in tropical and southern Africa, where it frequents much the same sort of habitat as does the Avadavat in Asia. It is the smallest of all the African waxbills and having a rather short tail tends to look even smaller than it is. The male of the tropical form (*A. s. subflava*) is dark olive brown above (with a faint suggestion of reddish about it, like a colour-fed Greenfinch) with a red stripe over the eye and red upper tail-coverts. His throat, breast and underparts are mainly golden and orange, the central part of the breast being rich orange-red and the flanks barred with dark olive. The under tail-coverts are a vivid red-orange. The female lacks the red eye stripe and has a pale yellowish or greyish-yellow breast and belly. The southern form (*A. subflava clarkei*) is very slightly larger and less brilliant, the male's underparts (except

for the orange-red under tail-coverts) being golden yellow with a touch of orange on the central part of the breast in many, but not all specimens. A male of this form that I have had since November 1958 is as bright as he was in importation plumage, but his upper tail-coverts and eye-stripe are now red-orange, not red, and his under tail-coverts are golden-orange rather than red-orange. This is compensated for, however, by the now purer and greener tone of olive-brown of his upperparts. This species may, however, go black in captivity, like the Avadavat, only it then retains the red and orange parts of its plumage and gives the impression of some odd new species.

The juvenile Gold-breasts and Avadavats are remarkably similar. Both are sober little olive-brown birds with paler underparts and near-white throats. The rather browner, less olivaceous, colour of the young Avadavats, their conspicuous buff wing bars (young Gold-breasts have only a suggestion of wing bars), and the difference in the begging calls are the quickest means of telling which is which.

Individuals Studied and their Conditions

The birds are kept in a small but very well-lighted room (see Goodwin, 1959 for fuller details). In the darker months of the year the electric light is turned on some time between 3 a.m. and 6 a.m. and left on till 8 a.m. On dull mornings in summer or on any dull day when I am at home (usually only week-ends) the light is put on. A letter-box sized "Judas-hole" is cut in the door so that I can observe the birds unperceived by them. At least this was the idea but, as will be narrated, the birds are not now so naïve about this as they once were.

Two pairs of Avadavats (*Amandava amandava punicea*) and two pairs of Golden-breasted Waxbills (*A. subflava clarkei*) were purchased from Mr. Trevor Crewes in October 1958, together with some Blue-breasts and a pair of Diamond Doves. I had not then thought of cutting an observation hole in the door and feared I should get little aesthetic or scientific enjoyment from my new purchases, since when I went into the room the Avadavats and the Gold-breasts would fly about in circles, bumping against the ceiling and only perching momentarily in exhaustion. Although now tamer they still usually panic in this manner if I, unthinkingly, look *at* them when in the room instead of keeping my eyes discreetly down-cast, like the heroine in some medieval morality tale. No doubt the reason for this wildness is because in a natural state these species would, when disturbed, fly some little way and then drop again into grass, reeds or other low cover. This was, at any rate, the behaviour of a number of Avadavats that lived wild all one summer about Perry Oaks Sewage Farm, near London Airport, whence they had, no doubt, escaped. At the time it seemed best to reduce the number of timid birds in the room, so I gave the Avadavats to my friend Colin Harrison.

They were kept in a cage indoors that winter, during which one of the cocks unfortunately died. The surviving cock and two hens were put into a big outdoor aviary in April, where they remained until late August 1959, when Colin gave them back to me. I placed them in the room with the other birds where they settled down at once and soon went to nest. I put a red ring on one of the females, for identification. Had this precaution not been taken it would indeed have been difficult to elucidate the tangled skein of the male's love life. He had paired with the unringed female, took turns in incubating their eggs and carried in feathers from time to time in the usual manner of incubating male estrildines. Most of his " off-duty " time, however, he spent with Red-ring, behaving then in all respects as if he regarded her as his mate. This, as may be imagined, did not endear Red-ring to the other hen, and while the male was incubating there was constant quarrelling between them, in which the " rightful " wife usually triumphed. At night the male slept side by side with Red-ring, never once in the nest as male Avadavats are said normally to do (Kunkel, 1959) during incubation.

I first heard the calls of the young on 23rd September. For about a week the male was too full of parental zeal to bother about anything else and when Red-ring tried to make up to him, as she did about once in every five minutes of the time he was off the nest, he repulsed her sharply. This, however, did not stop her importunities, since most female birds, once they have fallen in love with a particular male, are, like Buffon's dog, " not driven away by unkindness, but continue humble, submissive and imploring ", a contrast to the attitude they sometimes show when the boot is on the other foot. As the young grew their father favoured first one hen, then the other, but by the time the first young fledged on 14th October, he had accepted Red-ring and turned against the mother of his children. Not only did he attack her when she tried to make up to him, but he even resented her feeding their young and attacked her fiercely whenever he noticed her doing so. He continued to feed his young and look after them during this period in spite of the indifference of his new mate to them. It was of interest to note how, once his feelings towards her had changed, the fact that his first mate, like himself, was caring diligently for the young so far from arousing any sympathy for her, merely infuriated him. Parallel behaviour is not unknown in other bipeds.

Shortly, however, after a day or two of dithering between them, the male reinstated the unringed female and began repulsing Red-ring. Since the former hen had proved herself a good breeder I was not sorry at this, and gave Red-ring away to a friend who had an odd male Avadavat for whom he wanted a mate. By 2nd November the pair had a nest with five eggs, but on the 5th the light failed in the room and the birds had to be moved out for a day or two, involving, of course, the

destruction of the nest. They were returned to the room on the 7th and began building again on the 8th. This nest also was ill-fated. On 27th November, I noticed both birds off the nest, looking as miserable as the people in advertisements do *before* they are told the cures for " Tiredness Peaks " and " Night Starvation ". Guessing some disaster had overtaken the nest I looked and found that it had been pulled open at one side (by some inquisitive Blue-breast?) and five near-hatching eggs, smashed but with the wretched young in them still alive, lay on the floor. The adults nested again after about a week, but the cock was less enthusiastic in nesting behaviour than before and also had begun to show one or two brown feathers on his breast. A single young one, plump but poorly feathered (I think the parents had brooded it insufficiently) was found dead on the floor on 13th January. There were no others and no addled eggs in the nest.

The female seemed to want to go to nest again and got very restless when her mate, now moulting into non-breeding dress, showed no interest in so doing. She kept pecking at his head, even pulling feathers out of his head and flanks, but he responded only by sidling away. She also spent much time flying to and fro and calling loudly. Early in April the young male, of whom more shortly, began to court his mother, but she repulsed him. When she did so she frequently pecked, not at his head, as repulsing Avadavats usually do, but at the patches of *red* feathers now visible on his flanks. By 8th May the old male was also showing a few red feathers and there were four eggs in the nest in which he and his mate were taking turns at incubation. These eggs were, however, infertile.

By mid-June the old male had rather more red in his plumage and there was frequent fighting and chasing between him and his son Yellow Left, who was now almost two-thirds into red plumage. About this period both males were also seen to give the wing-fluttering display to the young female Blue Left. The old pair went to nest again but I did not record the dates or any details at the time. I first heard the young on 10th July, but they must have hatched some time previously to this. On that day I saw only the old male feeding them, but later both adult female and the young male Yellow Left were seen feeding the young. The latter's acting as family help did not endear him to his father, who would fly to and fro uttering his loud, piercing alarm note when he heard Yellow Left feeding the young and attack the latter as soon as he emerged from the nest.

When the young Gold-breasts fledged on 17th July, they were adopted (see under Parental Care for details) by the old pair of Avadavats and the young male Yellow Left who, apparently, mistook them for their own young. Doubtless it was with their connivance or encouragement that the young Gold-breasts all entered the Avadavats' nest, roosted there that night and stayed there, making only brief

sorties on the surrounding perches, for the next few days. Two young Avadavats fledged on 22nd July and the three others next day.

The two young reared in the autumn of 1959 were a cock, Yellow Left, and a hen, Blue Left. During their early days they had been repulsed by their parents after the latter ceased to feed them. They were temporarily allowed to associate with them again immediately after disaster to the nest in late November. Since the Blue-breasted Waxbills had never shown any parental interest in them it was surprising to find that both Blue Left and Yellow Left were, at times, considerably attracted to the Blue-breasts. Both would often, in moments of defeat or frustration, seek out a Blue-breast (usually the particular male, who was most willing to oblige) and solicit head-preening from it. Both copied the song of the Blue-breasts (see under Voice) and Blue Left, but not the male Yellow Left, showed strong evidence of being sexually attracted by Blue-breasts. If she saw a male Blue-breast begin his Stem-Display she would at once fly to him, hop near to him in the Tail-twist posture, regarding him intently with head turned somewhat towards him and head feathers sleeked down. If, on such occasions, the other hen Avadavat came near (by chance) Blue Left, clearly imagining her mother to be a rival for the Blue-breast's affections, would attack her furiously. Yet she never attempted to drive off the female Blue-breast that was (in most instances) actually being displayed to. Whether this was because she could not recognize a bird of this species as a possible rival, even although she could become fixated on one as a possible mate, or whether because she felt too much awe and respect towards *all* representatives of *Uræginthus angolensis* I do not know. The second seems to me the more likely reason and the one least unflattering to the Avadavat's mental powers.

The sight of a male Blue-breast about to display with a stem or grass blade in his bill, still more of one actually " dancing " in the Stem Display clearly aroused Blue Left's sexual feelings. This seems odd in view of the different appearance of the displaying Blue-breast (head and bill holding the nest-material pointing ceilingwards, bouncing up and down stiffly on his perch) to that of an Avadavat in its homologous display (bowing deeply with a feather or straw in its bill). It is possible, however, that, given some degree of social fixation on Blue-breasts, the latter's more spectacular display might constitute a supra-normal stimulus for a hen Avadavat. One male Blue-breast, who had been hatched and reared in the room, but not either of the two wild caught cocks, showed some reaction to the young hen Avadavat and would sometimes, if he was holding a stem, start to display if she came near to him.

The Golden-breasted Waxbills were, I am afraid, rather neglected with regard to observation for their first year or so with me, as I was then concentrating on studying the Blue-breasts. Unlike the latter

they did not start to nest for a considerable time. Perhaps this was because, in the presence of the larger Blue-breasts and the Diamond Doves and Canaries, which I then had, they did not feel sufficiently at ease. I think, however, that this species may have a more definite breeding season, even in the wild, than most other estrildines. It has a relatively quick moult, like that of some European passerine, which is in striking contrast to the slow progress of the Blue-breast's moult. Also I have not seen any breeding behaviour from my Gold-breasts when they are moulting whereas the Blue-breasts continue courting, building, laying, hatching and rearing whilst moulting. However, in late June of 1960 both pairs of Gold-breasts nested, although the eggs did not hatch. I think they may have been infertile. The two cocks, although fairly peaceful by day, threatened, sparred and chased each other fiercely at dusk and dawn and every attempt at mating that I observed in either pair was frustrated by the other male dashing down and attacking the copulating one.

Early in November of 1959 I caught and ringed a male and a female, putting a green ring on the left leg of each. It then became apparent that the male Green Left was paired to the unringed female and vice versa. The male Green Left died in February, 1960. For the first six weeks or so after his death his widow remained alone, not attempting (so far as I saw, but she may well have done so and been repulsed) to cluster with the pair. She did, indeed, usually rest within a foot or two of them, but that had previously been the habit of her and her mate when not in breeding condition.

By 20th March all three birds had begun to sit together without any overt aggression, but the Unringed Female was clearly in a subordinate position since she allowed herself to be preened by both the male and his mate Green Left but made no attempt to preen anyone herself. If Green Left imagined that she could enjoy the luxury of having a mate *and* a female subordinate she was, however, soon disillusioned, for by the first week in April Unringed Female had usurped her place in the male's affections and both her rival and her fickle ex-husband repulsed her fiercely when she tried to reinstate herself.

Touched by her plight I went out and bought another cock. By this time (early April 1960) south Africa [1] was no longer (as appeared to be the case from after the war until 1959) the main exporting country of African estrildines and so I was able to get a male of the much brighter and more beautiful tropical race. He had been cage moulted in a bird shop, was rather pale in colour but still a little brighter than the brightest wild male of *A. s. clarkei*, so I imagined he would soon win the affections of the widow. Alas, I bargained without the intense personal likes and dislikes of passerine birds. Although the new male has persistently courted both females and the old male has wavered to

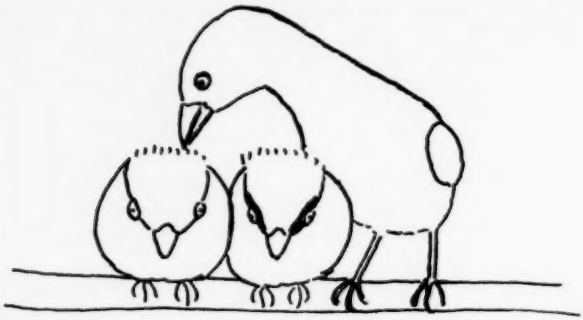
[1] The term is used geographically, not politically.

and fro between them, cold-shouldering first one and then the other, both hens are still (late August 1960) deeply enamoured of him and repulse every advance of the unattached male who constantly woos them. This sort of behaviour, a bird desperately eager to pair with another of its species who does not want it whilst remaining utterly indifferent or actively hostile to the impassioned displays of one who does want it, is familiar to all aviculturists and a warning against too mechanistic and " anti-anthropomorphic " an interpretation of bird behaviour. It is often true of the female of other creatures besides *Homo sapiens* that " If of herself she will not love, nothing can make her ".

The original male and both females had shown some signs of breeding behaviour (looking into nest baskets, toying with feathers) intermittently during the winter and early Spring, but it was not until early in May that Unringed Female laid. Five young were hatched but all (to judge from the minute mummified corpses I later found in the nest) must have died within a day or less, probably from lack of proper food, as their hatching coincided with a cold, wet spell when small insects were practically unobtainable. The parents nested again with no better luck, for the basket they chose had been fixed rather insecurely and fell down, breaking the four eggs. They soon tried again, however, and it was a case of third time lucky as four fine young were reared which are now (20th August 1960) about half-way through their first moult.

All the three (wild caught) male Gold-breasts that I have kept have often allowed themselves to be preened by a Blue-breasted Waxbill, whenever one of the latter species has indicated its wish to do so. Furthermore they have all when, apparently, frustrated or depressed—as just after getting the worst of a skirmish with a rival or being repulsed by a female they have been displaying to, deliberately sought out a Blue-breast and offered their heads to it for preening.

For a long time the hen Gold-breasts appeared too frightened of a Blue-breast approaching very closely to stay and allow it to preen them. I often saw one particular male Blue-breast attempt to preen one or other of the female Gold-breasts (he was just as ready to preen a male, approaching whichever happened to be nearest) but the latter always hopped away. One morning last Spring, however, when the pair of Gold-breasts (Unringed Male and Unringed Female) were sitting preening each other's heads this male Blue-breast sidled up. The male Gold-breast had been preening his mate, but he at once erected his head feathers and submissively lowered his head for the Blue-breast to preen him. After doing so for a few seconds the Blue-breast leaned right over him (see sketch) and preened his mate's head. Perhaps at first she did not realize who was preening her, as she had been in the intense head-offering posture and probably (as is often the case) had her eyes



Blue-breasted Waxbill reaching over male Golden-breasted Waxbill, which it has just preened, in order to preen the female.

closed. I saw this performance repeated a few days later and subsequently this hen Gold-breast has allowed the male Blue-breast to preen her, though I have not seen her actually seek out a Blue-breast and solicit head-preening from it as the male Gold-breasts do.

I have seen no evidence of any social rapport between adult Gold-breasts and adult Avadavats, other than momentary aggression at times from the latter towards the former. Once a female Gold-breast attacked two young Avadavats when they attempted to copulate. Even the four young Gold-breasts (all males) that were reared by and with Avadavats this year now (30th August) no longer associate with their former nest mates although they readily allow the aforementioned cock Blue-breast to preen them.

Feeding and Food Preferences

Small yellow millet, canary, maw seed and maggots are supplied *ad lib*. Seeding and flowering grasses, fresh turves of young growing grass and sprouted millet seed or grass seed with the earth in which it has been grown are supplied frequently, at *least* one of these items each day. Any plants I can find in or near my garden that are infested with green fly are also given to the birds to pick over. Blackfly they will not touch. During the warmer months of the year the top layer of earth from beneath a heap of garden waste is thrown in daily for the birds to search for small insects, baby centipedes, etc. During the late Spring and Summer I collect ant larvæ and pupæ (of the small yellow-brown ant so common in grassland and the small black ant common in gardens and some fields) each week-end. Those parts of the nest (usually just below the surface of the ant-hill on fine afternoons) containing most " ants' eggs " are shovelled into a polythene bag with layers of grass between each trowelful to lessen mortality by crushing. This is later spread on the floor of the room and some clods

of earth and clumps of grass placed near. Those " eggs " not at once eaten are carried beneath the shelter of these by the worker ants. If the latter are fed with sugar solution and chopped maggots and the surroundings not allowed to become too dry or too wet the " eggs " will remain viable and edible until the following week-end, if they have not been all eaten by then. All that is necessary is to remove the sheltering grass, etc., and expose them to the birds daily, or several times daily.

Once a week, rather oftener in winter or when there are young in the nest, the seed is treated with halibut oil. Sand, mineral mixture (a little of which is eaten) and crushed, dried eggshell (much of which is daily eaten) are supplied daily. Millet sprays are also supplied but are removed on the days when the oil-treated seed is given.

The Avadavats take mostly yellow millet. They are keen on sprouted millet and also on young growing shoots of grass and some other seedlings. Of seeding grasses they take several sorts but seem keenest on the Annual Meadow Grasses *Poa pratensis* and *Poa annua*. Like the Blue-breasts they also like seeding Knot Grass (*Polygonum aviculare*). They take insects keenly when they have young, are laying or are moulting, not often at other times, and the adults always eat dry millet in quantity even when fresh ant pupæ are available. Of insects ant pupæ and larvæ, the winged male and female ants (but not the workers), small caterpillars, very small centipedes, greenfly and gentles are all taken, usually in about that order of preference. Unlike the Blue-breasted Waxbills they will take Blow Fly pupæ as well as the maggots. Maggots are mumbled and nibbled in an attempt to break the tough skin (when will some enterprising person market some live food really suitable for small birds ?), but more often than not the attempt is vain and the maggot finally swallowed whole or discarded intact. Cut-up maggots are sometimes taken and are (unless ant pupæ are available) always supplied when the birds have young, but more often the Avadavat will choose the more attractive-looking live and intact maggot in preference to the mutilated corpse.

The feeding preferences of my Gold-breasts are similar to those of the Avadavats. They show, however, even more zest in searching fresh earth or compost for (presumably) minute invertebrates, and I have seen them eat *very* small earthworms, or what appeared to be such, as well as " baby " centipedes. They are also particularly fond of the growing tips of young grass and consume quantities of it whenever available. The only time I have seen a Gold-breast attempt to eat a maggot was when there were young in the nest. Then the mother (Unringed Female) sometimes tackled small maggots although I only saw her actually swallow one once. All the others I saw her with were finally discarded. The Gold-breasts do not seem to care for most seeding grasses (though very keen on fresh seedling grass shoots) but

eat the seeds of a grass that I have been unable to identify from books. This grass is very common and has, when ripe or nearly ripe, a silvery-fawn seed-head about two inches long, with silky, close-packed seeds, easily detached by pulling the head through one's hand. The small silvery seeds (smaller and dark brown when dehusked) are eaten by the Gold-breasts and I think may have played an important part in the rearing of the young.

I may add that all attempts to get my waxbills to eat " insectivorous food ", " egg-food ", cooked egg, and bread and milk have utterly failed. They will readily pick seed off any of these substances but that is as far as they will go. Writers on bird-feeding usually tell us our waxbills should eat such foods and that all we have to do is to confine them with one that already does so and they will copy its good example. Maybe they will but where does one get their mentor ? Such advice is as useful as telling a pauper that if he will only invest twenty million pounds expediently all his financial troubles will be solved. I dare say there *have* been waxbills that ate bread and milk, but I have yet to see one. For some months I kept two hen Canaries with my birds. These Canaries were, like all their kind, eager to sample anything new that was, or might conceivably be, edible. They ate fruit, egg, milk sop, " insectivorous food," mealworms, and much else besides with as uninhibited a zest as that with which Christians persecute the " sinful ". But not one Avadavat, Gold-breast or Blue-breast, ever followed their example.

Some Aspects of Behaviour

*Mutual preening.**

Avadavats and Gold-breasts habitually preen each other's heads in the same manner as other estrildines. Further observations have fully confirmed my previous opinion (Goodwin, 1959) that, in all species, this involves sublimated (and not always completely sublimated !) aggression on the part of the preener and submission on the part of the preenee.

In both Avadavat and Gold-breast the subordinate, or supplicatory, of any two birds is even more likely to offer its head as an appeasing response to actual or threatened aggression than is a Blue-breast in similar circumstances. Individuals, even when in a mood to have their head preened, only permit such familiarities from those whom they regard as their superiors or equals. As an example : on 29th November, 1959, I noticed the adult pair of Avadavats sitting side by side, the male preening his mate's head. She was in the extreme " head-offering " posture with bowed head and erected head feathers. The young male Yellow Left alighted about a foot away on her other side

* For convenience I use this term, although, as explained, the preening is not mutual if the birds concerned are socially unequal.

and at once noticed this. Either genuinely "thinking" that his mother's attitude towards him had now turned to a proper and welcome humility, or else simply unable to resist the temptation, he sidled up and attempted to preen her. She at once snapped out of her appeasing posture and pecked him fiercely in the face. He hopped

Male Golden-breasted Waxbill offering its head for preening.

away, blinking and shaking his head as if in pain. Then he sidled back to the old hen, but this time instead of attempting to preen her he offered *his* head to her for preening. She preened him in a *very* rough manner for a few seconds, then turned towards her mate (who during these mother-son exchanges had remained unmoved by her side) and offered him her head again.

However, although head-preening expresses the dominance (probably only symbolically and momentarily in the case of mated pairs and young birds that are friendly with each other) of the preener, it also shows that its aggressiveness has been sublimated, at least to the extent that it will not attack or drive away the bird it preens. The way in which weaker birds, especially when apparently feeling depressed or socially insecure through having been defeated in a fight, will often go up to stronger individuals (often to individuals of different and stronger species, as with my Gold-breasts that go to the Blue-breasts) and deliberately offer their heads for preening shows, however, that they derive some satisfaction from being preened.

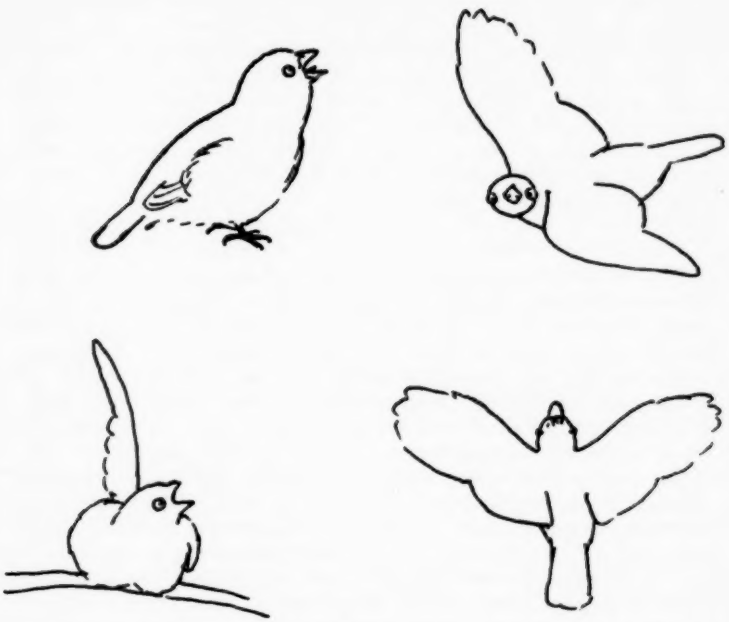
The preener, in such cases, gives the preenee no help against its enemy in any future encounter nor does it show any regard for the weaker bird except such as may be implicit in preening its offered head instead of attacking it. And this is not much, I think. Presumably the weaker must, nevertheless, get some sense of comfort, support or security from simply submitting to this not overtly aggressive expression of dominance by the stronger. Perhaps it feels, at a simpler level, the same sort of mental comfort that some humans derive, especially in times of stress and trouble, from the emotional relationship (which they believe to be reciprocatory or complementary) existing between themselves and a sacred crocodile, the One True God, or their favourite psychiatrist.

The food-begging of the young.

It has long been known (see Kunkel, 1959 for references) that fledged young Avadavats and Gold-breasted Waxbills differ from other estrildines, the Green Avadavat excepted, in that they raise their wings when food-begging. Most writers on the subject seem to think that these wing movements are not homologous with the usual wing flapping or fluttering of begging young passerines. However, I am inclined to doubt this and to think that the differences between the wing movements of these estrildines and those of other young passerines has been rather over-emphasised.

If a hungry young Avadavat or Gold-breast is approached by its parent it crouches, twisting its neck round and opening its bill in the usual manner of other young estrildines. It also partly opens and/or makes fluttering movements with its wings, then, as the parent comes up to it, it raises the far wing. If the parent is not on the same branch the other wing may be raised to some extent also. If the parent approaches the young one from directly in front it raises both wings equally high. The wing(s) may be thrust out obliquely or horizontally rather than vertically. The near wing may occasionally be extended in spite of the parent's approach along the same perch, and the latter may trip over it or perch on it, unintentionally pinning its offspring to the perch in so doing. If the fledgling is sandwiched tightly between its brethen sitting on either side of it on the same perch it makes no perceptible wing movements. Under these last circumstances it does not seem " obliged " to accompany even the most intense crouching and neck twisting with any wing movements. The intensity of all these begging movements depends on the eagerness of the young for food. A nearly sated young one merely opens its bill without making any wing movement or attempting to crouch and twist its neck. Every possible intermediate form between the above described highest and lowest intensities of food-begging are shown according to the fledgling's degree of eagerness for food.

The appearance of the young when begging at high intensity is so suggestive of the fleeing-intention component in the defensive display of pigeons (see Goodwin, 1956) that I at first thought the wing raising might indicate a tendency to flee from the parent. Since, however, it is shown most when the young one is most eager for food and not at all when it is nearly sated this seems hardly plausible. If an impulse to flee from the parent were present it would, one imagines, be strongest when the young one is least in need of food, not vice versa. Admittedly it is feasible that a gesture deriving from the intention to flee might by its implied inferiority or submissiveness have come to be used when the young one must needs to propitiate, or ingratiate itself with the parent. But there does not seem any positive evidence for



Food-begging of young Avadavats or Golden-breasted Waxbills. From top left to bottom right : (1) By a nearly sated juvenile. (2) By a hungry juvenile to parent on its left, as seen from side. (3) By a hungry juvenile to parent on its left, as seen from front. (4) By a hungry juvenile to parent in front of it, as seen from above.

this. I once saw a frightened young Avadavat beg, while still "freezing" in alarm with sleeked down plumage, and it did so by simply opening its bill without wing or neck movement. A moment before hearing its father's alarm calls this bird had been begging intensely with raised wing, so evidently fear had the same inhibiting effect on its begging display as satiety usually does.

I think the wing movements of these species may originally have been a balancing movement, homologous with and derived from the usual fluttering wing movements shown by other young passerines. Secondarily it may have become ritualised, to some extent, as a display. But ritualization does not seem to have gone very far and I think it not at all unlikely that the throwing upwards or outwards of the wing or wings may still function as a balancing movement, under natural conditions. It seems quite possible that a fledgling clinging among

grass stems or reeds would often have to make some compensating movement of the wings if it were not to overbalance when adopting the crouched, neck-twisting posture of high intensity begging. This is, however, mere speculation and only observation in the wild or in an aviary with the same sort of vegetation as the wild birds usually nest among could show whether or not it is valid. Even among the twigs and branches in the room, however, I often got the impression that the upthrust or outthrust wing(s) of the fledgling aided it to maintain balance as it begged or was fed.

Displays of the Avadavat

The Avadavat has a display with nesting material held in the bill that is undoubtedly homologous with the Stem Display of the Blue-breast and the similar displays of other waxbills and firefinches (see Goodwin, 1959, Harrison, 1956, and Kunkel, 1959). In it the displaying bird, with a piece of grass or feather held by the shaft in its bill and with its body feathers puffed out bows slowly, then sings and bows again. Kunkel describes this display in detail and evidently saw it many times from both sexes. I have often seen abortive versions of this display from young birds, including the 1960 youngsters that only fledged late in July (time of writing this, 20th August), but have only twice seen it given in full form, on each occasion by the old hen to her mate at times when she was, apparently, eager to go to nest and he was not. Sir Godfrey Davis (1928) would appear to have seen it only from the females of the several pairs he kept also. I doubt, however, if the female is really more prone to give this display than the male. It is more likely that if one partner is ready to mate and breed and the other unresponsive, then the former, whatever its sex, will display.

The male also has a display that is in form essentially similar to the posturing of the young when begging at high intensity. In it he crouches, raises and flutters the far wing and may somewhat extend the near wing, which may also be fluttered. Sometimes his tail is pressed to the substrate and sometimes it may be twisted towards the female. Usually the male turns his head somewhat towards the bird he is displaying to and utters the soft, twittering nest-call. He may sing during the display or (and more often) immediately afterwards or in an interval after which he crouches and flutters his wings again. I have seen this display given, on many occasions, by both the old male and Yellow Left, towards the young female Blue Left, whom neither of them has ever appeared very interested in. Usually after giving this display the male so doing has either threatened or pecked the female and driven her off or attacked some other bird. Twice the display (each time by the old male) has been terminated by the other male attacking the displaying bird. Sir Godfrey Davis (1928) implied that

this display was the male's response to the bowing display from the female, but he saw it from a male whose own mate had been taken from him and a new female substituted. Kunkel, at the time of writing his paper, had only seen this display from a male Avadavat to a Grey Waxbill (*Estrilda troglodytes*), but has since seen it given to other Avadavats but only, he informs me (*in litt.*), to strange females, never to the male's own mate.

The exact significance of this display is difficult to fathom. It is probably homologous to the wing-fluttering display of the Blue-breast but is not apparently given, as is the case with the latter, in a submissive display to the loved one but only to females whom the male is *not* in love with. It does, however, seem to indicate that the displaying bird's aggressiveness is at least temporarily inhibited, perhaps through sexual attraction. At any rate the female Blue Left usually seemed sexually excited by it, as shown by her hopping nearer to or around the displaying male in the tail-twist posture. Once she pecked at the old male and he only hopped away from her and continued displaying, although when he had finished he attacked her and drove her away.

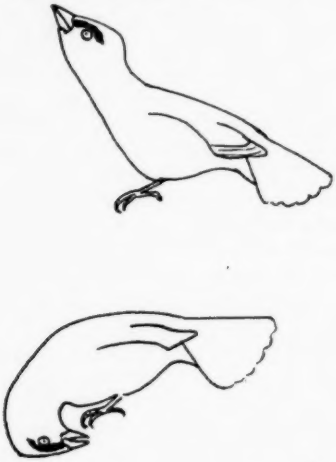
I have not had the impression, as I have with the homologous wing-movements of the begging young (q.v.), that the raising of the wings in this display might serve partly to maintain the bird's balance. However, I have only seen it given when the displaying bird was on a firm substrate (the window ledge) and the similar (and homologous wing-raising of the threatening Bronze Mannikin (Morris, 1957) is thought to function as a balancing movement as well as to display the bright wing markings to the rival.

Like the Blue-breast and Gold-breast (and many other estrildines) the Avadavat shows the Tail-twist Posture, usually when it approaches another individual who attracts it sexually. In this it hops up to the other with the crown feathers sleeked, giving the head an odd, triangular appearance, and twists its tail towards the other bird. I mean, of course, the tail is held at an angle to the body, not that its actual feathers are twisted. When it does so the brilliant upper tail-coverts are shown clearly to the bird being approached.

Kunkel describes a copulation ceremony in which the male pecks at the female's neck and she (if ready to mate) quivers her tail. On the few occasions that I have seen my birds successfully copulate the male has simply hopped up to the female and mounted her without more ado. I have seen many similar attempts which have been frustrated through the female moving away or pecking at the male. It would be of interest to know if there are racial differences in the extent to which some displays are given as between the races *punicea*, which my birds belong to, and *amandava*, which latter seems to have been the race kept by Kunkel and Davis.

Displays of Gold-breast.

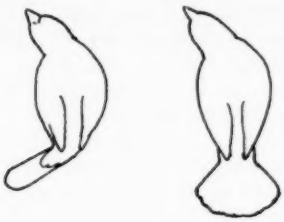
The male Gold-breast has a display homologous with the stem-display of most waxbills and the bowing of the Avadavat but which is performed without any nesting material in the bill. He hops up to the female in the tail-twist posture and then may, or may not, hop around her before, from a position at her side, bowing deeply. He bows to the side away from the female, not towards her as does the Avadavat.



Highest (top) and lowest (bottom) positions of male Golden-breasted Waxbill giving its bowing display with fanned tail.

Copulation may follow if the female is willing although, as is usual with courtship displays, the most intense display from the male is seen when he is eager and the female indifferent or hostile. Immediately before and during bowing the male usually gives a rather soft version of the nest-call (q.v.), and there is often a rapid opening and shutting of the mandibles. Kunkel's birds would appear not to have given any notes (unless too faint or high-pitched for him to hear) in this situation, but mine certainly do so much more often than not.

Sometimes instead of twisting his tail towards the female the male fans it during the bowing display. Then as he bows there is an opening and closing of the tail feathers but they never close to the same degree as when the tail is held normally. In this tail-fanning version all the male bird's movements and posturings are identical with those used by the nest-calling male. The only difference is that when nest-calling the male is usually in a site more or less suitable for a nest. However, no hard and fast line can be drawn between nest-calling proper and the



Bowing display of male Golden-breasted Waxbill with tail twisted towards the female (left) and with tail fanned (right), as seen from above.

bowing display (tail fanning version). During his long, vain courtship of the two females the unpaired male would very often display from perches that were quite unsuitable as nest-sites (though even more often from suitable sites) provided that a female was near. Under these circumstances the female might be in any position (in front, behind, above, below, to one side, etc.) relative to the displaying male. When the female is below or behind the male the tail-fanning displays the dark, white-edged tail and the vivid orange ventral feathers and under tail-coverts to the best advantage. However, the male does not seem to seek this position *vis-à-vis* the female when nest-calling.

So far as the bowing display is concerned I have the impression that tail-fanning indicates a greater degree of emotion or perhaps emotion of a slightly different quality (more supplicatory, less overtly sexual?) than does the tail-twist version. Although no nesting material is held in the bill the movements of the displaying (or nest-calling) Gold-breast are even more obviously derived from nest-building movements than is the case with the homologous displays of other waxbills.

Kunkel (1960) describes a display of the female Gold-breast in which she hops around the male, stretches herself up tall, puffs out her feathers and then sleeks them again, sometimes with and sometimes without a piece of grass in her bill. I have not seen this although I have often seen the male hopping up to and around the female in a very upright posture. Usually this behaviour has appeared to be just intention-movements of mounting the female and has indeed often ended in the male jumping on to the female's back (usually after having hopped round behind her) and her fleeing from under him. Sometimes, however, the male has faced the female in this posture and then his orange breast (in the typical race) is prominently shown to her. I have only once seen a male perform this display, if so it can be called, with anything in his bill. Then it was a piece of grass that he had been toying with before and I had the impression that it was by chance that he retained hold of it.

Nesting and parental behaviour.

My Avadavats and Gold-breasts choose nest sites high up, within a few feet of the ceiling. This differs from the Blue-breasts who, although they often choose high sites, will readily nest within 4 feet of the floor. Since wild Gold-breasts and Avadavats usually nest low down, choice of my captive birds are evidently artifacts of captivity, caused, no doubt, by the birds associating my presence, which they fear, with the lower levels of the room. Both when wild and when in captivity birds choose nest-sites where they feel secure. In the wild this will (except in some man-altered environments) result in their choosing the best available natural sites, but in captivity it may result in what first appears an " unnatural " preference.

The Avadavats, when selecting a site among twigs or branches, choose one with some fairly firm horizontal support. This may be a personal idiosyncrasy, although as Kunkel has pointed out in his detailed account of nest-construction in this species, the first stage of the nest is a flattish platform of material. Like Blue-breasts and Gold-breasts they will readily nest inside one of the wicker baskets with a hole in the side sold for " foreign finches ". One can in such cases see even less of the building movements than otherwise. Nevertheless, with several birds kept together many nests built exposed to the prying beaks of others come to grief. So, when I wish a brood to be reared, I destroy the first stages of any nest built in the branches and place a basket in the exact spot, when it is almost always accepted and the new nest built inside it.

Both male and female Avadavat build and carry feathers for the nest lining but I have only seen the cock take grass and stems for the outer part of the nest. Both sexes also take pieces of burnt and charred wood into the nest. This they do most when the eggs are near hatching and while the young are small but, to some extent, at all times from egg-laying till the fledging of the young. These bits of burnt wood are pushed into and just under the surface of the nest-lining. In two nests which I dissected they were found everywhere except in the roof of the nest, but about three-quarters of them were concentrated within an inch or so of the entrance. The grass-finches (*Poephila* sp.) are known also to take bits of charcoal into their nests, but I have seen no records of any other estrildines doing so. My Gold-breasts and Blue-breasts have shown no interest in the burnt matches and morsels of charred wood which the Avadavats take so eagerly. It would be interesting to know what is the use of this habit in the natural state.

Most writers on estrildines have said that they all carry nesting material in the same characteristic way, taking the feather, stem or grass blade by its firmest end. Kunkel (1959) says (of all estrildines) " . . . only very thin and short strands they occasionally ' bundle ' " So far as I have seen Gold-breasts and Blue-breasts never " bundle ".

any material but always find the hardest end of the stem or feather and carry it by that. They appear to be psychologically incapable of carrying anything in any other way. The Avadavat, however, uses both the normal " bundling " method of most passerines (which anyone who has watched a building Canary will be familiar with) and the typical estrildine method. It has a preference for the latter and uses it where possible without loss of efficiency but not otherwise. One large feather (I give the body feathers of poultry, which can be found in quantity inside cushions, pillows and similar household objects) will, for example, be taken by the base of the shaft, but if two or three such feathers are near each other the Avadavat will " bundle " them and carry them grasped across the (approximate) middle of the shafts.

White and pale-coloured feathers are preferred, as a rule, to similar but dark-coloured ones. *Amandava amandava*, however, shares with *Homo sapiens* the vice of covetousness and the *most* desirable feather is one that some other bird is just carrying to its nest. This the cock Avadavat, if in a feather-collecting mood, will usually try to snatch away from its owner before bothering about other feathers, just like it, which nobody has claimed.

Both sexes incubate, in turns, and both feed the young in the nest and after fledging. There is no division of the brood between the parents after the young are out of the nest, such as occurs with many species. Possibly, however, this would not in any case occur in the limited space of captivity. Could some of our members who have bred species such as the House Sparrow, which when wild divide the brood after fledging, enlighten us on this point? The young are fed by regurgitation, the parent thrusting its bill into their mouths to do so.

When the three Avadavats were feeding the mixed brood they showed no specific discrimination. Young begging intensely, whether Avadavat or Gold-breast, were usually given precedence. Often the adult would approach a group of six or seven mixed fledglings on a branch, feed the nearest one, then scramble over the backs of two or three to reach one in the centre that begged eagerly. The very marked difference, at least to human ears, between the begging calls of the two species never seemed to perturb the old Avadavats in the slightest degree or make them show their own young any partiality.

I have never seen a female Gold-breast do more than carry an odd feather to the nest, though she may, probably does, share in its construction, at least after the outer structure has been built by the male. In a wild state this bird often merely relines the old nests of other species (Praed and Grant, 1955). Mine have built quite effective nests in the branches, choosing mainly blades and leaves of dead grass. However, for safety's sake I now try to get them to nest in the globular baskets, as already described.

Unfortunately I was so engrossed with my Blue-breasts in the summer of 1959 that I paid little attention to the two pairs of Gold-breasts that then nested. Of the pair that nested successfully this year the cock only took short and not particularly frequent spells on the nest during incubation. I never saw him brood or feed his young, although he often peered interestedly but somewhat apprehensively into the nest when his mate was feeding them and sometimes when she was not. When the young had fledged he not only fed them, but then, after they had gone into the Avadavats' nest, he entered it in order to feed them. He did not, however, feed them so often as his mate and he showed a great tendency to preen them instead of feeding them, often rather roughly, which suggested that he felt some hostility towards them.

Unlike the Avadavats the parent Gold-breasts fed only their own young, picking them out unerringly from among the young Avadavats. Only once did I see the hen Gold-breast start to feed a young Avadavat, but then she stopped at once, before the wretched fledgling had a mouthful, and flew off to find one of her young to feed instead. If, as is likely, birds that have nestling young learn to recognize their young at fledging time, this could easily account for the acceptance of the young Gold-breasts by the Avadavats and the non-acceptance of the latter's young, which appeared later, by the Gold-breasts. But that is not the whole story since during the several days that the Avadavats' nest contained (most of the time) five young Avadavats and four young Gold-breasts, the latter's parents fed only their own young *and the young Avadavats did not beg to them.* Often I watched the hen Gold-breast go into the nest and heard her young beg loudly, but not a sound from the young Avadavats. Then, often only a few seconds later, one (any one) of the three Avadavats would enter the nest and at once there would be a clamour of begging cries from the young of *both* species, proving clearly that the young Avadavats had not been sated, and for that reason silent, when the adult Gold-breast was feeding its young. Possibly parent estrildines have, like many birds, a very soft call with which they indicate readiness to feed young (though I have never been able to hear such a call and it must be very faint), but if so it is surprising that the Avadavats did not respond (or, perhaps, quickly learned from not being fed not to respond) to the Gold-breast's food call whereas the young Gold-breasts certainly responded immediately whenever an Avadavat entered the nest. I must add that on the occasion that I saw the hen Gold-breast start to feed the young Avadavat she flew to it and its begging may well have been in response to her preparatory intention movements of regurgitation. Or again it may actually have begged at one of the adult Avadavats nearby. I certainly got the impression that it was hearing its begging call that made the Gold-breast realize her mistake.

When a young Avadavat first leaves the nest its parents show great excitement, fly close above it, settle by it and apparently endeavour to lead it back into the branches, usually successfully, should it land on the floor. Under the conditions under which my birds are kept the parents' solicitude in some matters can be vexatious for all concerned, their constant warning whenever they see or hear me or whenever one of the young ones makes a bad landing or flutters against the wall tending to frighten and confuse the young ones. Whereas normally, even if they see me looking through the Judas hole, the adult Avadavats take little or no heed, when they have fledged young all is changed. Then, if the bird notices me looking through the hole, it at once gives loud warning notes. When doing so the old cock (but not the young cock or the hen) would often fly down towards the opening, hover, calling loudly only a foot or so from my eyes and then return to the branches. Whether the birds actually know it is me behind the door on such occasions or whether they merely know that *something* is there I do not know. Either explanation would account for their behaviour and not contradict their usual indifference, since most birds, when they have young near fledging age or recently fledged, react far more intensely to possible danger than they do any other time.

Kunkel (1959) states that estrildines never attempt to protect their young. The loud outcry and intention-movements of flying at me shown by my male Avadavats and Blue-breasts if I hold one of their young and it cries out in my hand make me think that they would attack if they dared to do so. Males of both species fiercely attack other adults that attempt to copulate with the fledglings, which they frequently do. When so doing they peck only at the mounted adult, not at the fledgling and do not attempt to take the former's place when they have dislodged it. However, this defence of the young may be motivated by sexual jealousy of a sort, since I have not seen a female defend her young in this situation. The young male Avadavat attempted several times to copulate with the fledglings which he was also feeding, and was violently attacked by the old male whenever he did so.

Voice

" *Call notes* ".

Both Avadavat and Gold-breast give similar high-pitched and rather shrill but " sweet " calls in many situations. I think it is probably due to the inadequacy of the human ear, or at any rate my ear, rather than an inadequacy of the birds' vocabularies that they seem to have far fewer distinct notes than, for example, a Blue-breast. The calls are usually monosyllabic but several such calls may be repeated at short intervals. The Avadavat gives a rather loud, long-drawn (but still monosyllabic) version of its usual call when attacking or threatening

a rival with whom it is really angry (or of whom it has some fear ?) but seldom does so when it casually repulses some importunate inferior.

A still louder and more emphatic version of this call is given by parent birds when they suppose their fledged young are in danger. A rapidly repeated series of " run-together " notes, with a very excited tone and on a descending scale, is quite often given. When I have actually seen the bird giving them it has been in the typical singing posture (q.v.) and the notes have seemed to function as an alternative to song.

The nest call.

When " nest-calling " both species utter a series of rapidly repeated, soft but high-pitched notes that could, perhaps, be transcribed " Ti-ti-ti-ti . . . . . " or " Teh-teh-teh-teh . . . " In the Gold-breast these notes are higher pitched and fainter than in the Avadavat although, at least to my ears, clearly audible. There is some variation of loudness and pitch according, apparently, to the intensity with which the notes are given.

The Avadavat gives these notes when nest-calling from an actual or potential nest-site. Presumably it then accompanies them with symbolic or actual building movements, but I have not had a clear view of a nest-calling bird of this species, so cannot be sure. When the male brings a feather to line the nest, while the hen is incubating, one of them, I think the hen, usually gives the nest-call as soon as he enters the nest. The male may also give the nest-call when giving his wing-fluttering display (q.v.)

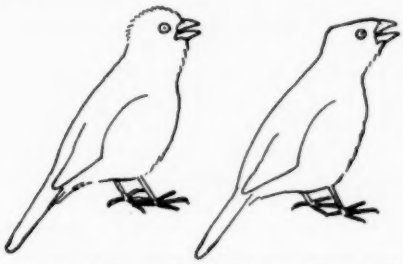
The Gold-breast gives the nest-call not only when nest-calling but also immediately before and during his bowing display (q.v.). Both " nest-calling " and the bowing display may, however, be performed in silence although perhaps, on these occasions, the calling is given at a lower intensity and is inaudible to the human ear.

Song and vocal mimicry.

As everyone who has kept them knows, wild-caught male Avadavats have a very pretty little song that is given on a descending scale. I have heard this only a few times from my old male (once firmly paired, Avadavats seem to sing very little) so cannot say to what extent an individual may have different songs or at least songs that vary somewhat from each other.

Perhaps because his father seldom or never sang during his youth and adolescence the young male Yellow Left, when his song began to " crystallize out " from the rambling inconsequential warbling that young Avadavats, like most other young passerines, begin to utter when only a week or two out of the nest, imitated the Blue-breast's songs. By March 1960 he had in his repertoire what appeared to be the innate song of his species, an *exact* copy of the Blue-breast's

song (utterly unlike the Avadavat's song in sound) and various intermediate songs between the two. Whether he had an innate ability to render his own song or whether, which seems more likely, he had learnt it from his father having, possibly, given it when I was not at hand, I do not know.



Avadavat singing in typical posture (left) and with crown feathers sleeked down (right).

Given the faculty for mimicry it is not surprising that the young male Avadavat should have learnt the cock Blue-breast's song, which he heard so often from infancy onwards. What did astonish me, however, was the behaviour of his sister. She had always spent much less time "warbling" when young, than he, and usually gave only rather short and disconnected utterances. Finally, however (by March 1960), she had "decided" on her song, a perfect imitation of the song of the *female* Blue-breast! This differs, *inter alia*, from the male's song in being shorter and to this extent agrees with the natural song of the female Avadavat but seems, to my ear, to have little else in common with it. Since female Blue-breasts sing much less than the males she had certainly had far less opportunity to learn this song than she would have had to learn the male Blue-breast's song, which she has never, so far as I know, imitated. Indeed I first heard her giving her version of the female song only a week or so after a hen Blue-breast had been widowed and had, therefore, begun to sing quite often for a short period. So it seems as though this female Blue-breast's song was "what she had been waiting for" and that she learnt it quite quickly once she had heard it.

As with most other estrildines, song in the Avadavat is sexual rather than territorial or hostile in character. Sometimes the sexual element seems very slight or sublimated as in the warbling of juveniles. Usually the bird sings in an upright posture with body feathers, especially on the under parts, and those of the crown somewhat erected. When singing at a female it is courting it may, however, sleek down its crown feathers so as to present the triangular head shape common in sexually displaying estrildines (see sketches). Most commonly the singing

Avadavat perches alone, but " alone " in this context often merely means that it sidles an inch or two along the perch from its companions before singing. I have, however, occasionally seen the young male Yellow Left sing while actually perching in contact with another individual. Except in the bowing display I have never heard an Avadavat sing in the immediate presence of its own mate, although the young male Yellow Left often sang at the old female whom he was vainly courting.

Kunkel states emphatically that no estrildine sings in defence of its territory. In the sense that by the term " song " we understand a series of notes that are aesthetically pleasing to the human ear, this may be true but the Gold-breast has, however, characteristic notes that, *so far as one can judge from captive birds*, seem functionally equivalent to the hostile songs of many other passerines. This is a loud, rather strident chirping, rather like the chirping a male House Sparrow utters when perched outside its nest site or when in cover of trees during a shower of rain. Usually three or four rather high pitched chirps are followed by one on a lower key and rather harsher in tone.

This chirping is given by the male during the breeding season. He may utter this strident chirping at any time of day but does not often do so except in the early morning and evening. With the first hint of light, and before most of the wild birds outside are singing, the strident " song " of the Gold-breast starts up in my bird room, making me hope that it is less audible to my neighbours than to me. The " singing " male perches in a very upright posture and turns his head about as he calls. As the light grows and his rival becomes more visible, fierce sparring and chasing alternate with the calling. The chirping also accompanies the actual chasing and when the birds are in contact or nearly in contact during a chase a rather long-drawn chirp, even harsher and lower pitched than the relatively harsh and low-pitched one that comes up about once in four in the interminable chirping " song ", is uttered, often several times in quick succession, I think by the chasing bird but cannot be sure. Similar " singing " and sparring takes place at dusk and a little before it too sometimes, though relatively seldom during the rest of the day. Switching on the light as soon as the Gold-breasts start to sing or before the first trace of the natural light has induced them to begin, does not prevent them from singing but does, as a rule, shorten the period for which they do so.

Kunkel does not mention this singing and related behaviour at all but it seems unlikely to be an artifact of captivity as all three of my males have shown it in identical form. It is possible, however, that it is purely hostile rather than territorial and it would be interesting to know if males of pairs kept out of sight and hearing of rivals " sing " in this manner. I shall be most grateful for information on this or any other point of interest from other keepers of Gold-breasts.

Anting

My Avadavats and Gold-breasts ant frequently with either the workers of the small black ant (? *Lasius niger*) or the small reddish-yellow ant. When so doing sometimes one wing, sometimes both may be brought forward. Usually the wings are spread only a little or not at all. So far as I have been able to see neither species actually picks up ants in the bill though, like some other species that do not, it makes movements of doing so and then makes a stroking movement of the bill down the inner side of the primaries or of the forward thrust tail. As well as this more or less typical anting behaviour I have, on one or two occasions, seen Avadavats, but not Gold-breasts, crawl over the ants with spread, depressed tail and " humped " back in a manner very similar to that of a Woodlark or Reed Bunting in its distraction display.

Note on Moulting of Avadavats

Davis (1928) says that Avadavats are not ready to breed until the male is in red plumage. Kunkel (1959) on the other hand found that his birds showed breeding behaviour irrespective of their plumage state. My male birds have shown breeding behaviour from the start of moult into the red plumage, or rather from the time a few red feathers have grown. However, it seems possible that their doing so has an inhibiting or delaying effect on the moult. My old male who did not breed in the Spring and Summer of 1959 and was in full colour by August 1959 is now (30th August 1960) only half in red plumage. The young male Yellow Left, who commenced moulting in March 1960, was only about three parts " red " by mid-August and has now commenced moulting into the brown plumage without ever having completed the moult into breeding dress. Both of my males cease to show reproductive behaviour as soon as the moult into the brown dress begins.

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LONDON ZOO NOTES

By J. J. YEALLAND

Of the birds received during the past two months, three species have not previously been exhibited at Regent's Park. These are a pair of Eastern Pratincoles (*Glareola maldivarum*), a Brown Violet-eared Humming Bird (*Colibri delphinae*) and a pair of Ruppell's Weavers (*Ploceus galbula*).

The Pratincole is considered by Peters to be a separate species, but by others to be an eastern race of *G. pratincola* which it much resembles. The Brown Violet-eared Humming Bird inhabits parts of Central America and tropical South America and Ruppell's Weaver is found in north-eastern parts of Africa and in western Arabia.

Other arrivals of especial interest are an Eritrean Shikra (*Astur badius sphenurus*), a pair of Abyssinian Ground Hornbills (*Bucorvus abyssinicus*), two Violet-eared Humming Birds (*Colibri coruscans coruscans*), Striated Jay-Thrushes, Black-headed Sibias, Lanceolated Jays, Jackson's Whydahs and a Fire-tailed Finch.

After unsuccessfully nesting in 1958 and 1959, a pair of Sarus Cranes have hatched two chicks which are now (at six weeks of age) some 36 inches tall. The incubation period was thirty days. At first the parents fed the chicks almost exclusively on pieces of earthworm, digging for them in the paddock when the proffered supply ran out. They were also supplied with minced raw meat, cleaned maggots, one of the pellet foods used for the feeding of turkeys and some corn. Ripe mulberries from a tree in the paddock were eaten by the parents, but whether any were passed on to the chicks is not known. The chicks still take food from the tips of the parents' beaks, but generally pick it up for themselves. This Crane was bred at Whipsnade in the 1930–40 period, and, of course, elsewhere, but not previously in Regent's Park.

A King Penguin, the only one to hatch from three eggs, did not survive. One Night Heron, the first to be bred since several years ago, has left its nest. White Peafowl and Californian Quail have chicks.

AVICULTURAL BULLETIN : Official Organ of the Avicultural Society of America.

The Avicultural Society of America was founded at a meeting in New York on 19th October, 1927. During the first year of its existence it had no publication of its own but used the columns of *The Pet Dealer* under the heading " The Avicultural Magazine ". By the end of 1928 the society had grown sufficiently to warrant a magazine and it was perhaps somewhat natural that this heading should be retained as the title for the new publication.

The first issue of THE AVICULTURAL MAGAZINE appeared in January, 1929. The duplication of our title would, of course, have caused very considerable confusion. On representation being made to the American Society it willingly changed the title to AVICULTURE—the first number of which was dated March, 1929. From then until the end of 1932 it was published monthly, but in 1933 the Society ran into difficulties, mainly due to the collapse of the bank holding the Society's funds, and publication more or less lapsed. By 1935 the Society was back on it's feet and the Magazine appeared bi-monthly until the end of 1943. During the following six years publication was spasmodic, but several numbers, even four or five, were produced each year. Publication was finally suspended at the end of 1950. At that time the affairs of the Society were at a very low level and it was, in fact, only just managing to survive. There then seemed little likelihood of its again being in a position to publish a regular journal and it was under these circumstances that Jean Delacour proposed that there should be an amalgamation of the AVICULTURAL MAGAZINE and AVICULTURE, and that the AVICULTURAL MAGAZINE should serve as the Official Journal of the British and American Societies—the two societies retaining their individual identities, (see AVICULT. MAG., 1951, 3). This position has obtained until the present time.

In 1954 a postal ballot of the members of the American Society showed an overwhelming majority in favour of the Society again having a publication of its own, and so in October, 1954, the first number of the AVICULTURAL BULLETIN appeared. It has been published monthly ever since.

Not by any means all members of the American Society are members of the Avicultural Society, too, and these naturally regard the BULLETIN as their Society's official organ. It does indeed appear to be the wish of the majority, so henceforth the AVICULTURAL BULLETIN must be recognized as such.

The severance is really little more than a technicality and will, of course, in no way impair the very friendly relationship that has always existed between the two societies.

It is very satisfactory to be able to record that the American Society is now fortunate in having a number of hardworking and enthusiastic officers and directors, and while the membership is at present comparatively small numerically it is in the main no less enthusiastic. We certainly wish them well.

Arthur A. Prestwich,
Hon. Secretary.

* * *

NEWS AND VIEWS

Longevity. A Northern Barred Owl (*Strix varia*) that arrived at the Quebec Zoo, Canada, on 4th July, 1938, died on 29th January, 1960, aged over 22 years.

* * *

Last year the Edinburgh Zoo received forty King Penguins, twenty-seven Gentoo, fifteen Maccaroni, nine Ringed, and nine Adelie. It was the first time that the Adelie had been brought to Great Britain. The prolonged, hot summer following their arrival proved too much for these birds from the far Polar regions and all except one died.

* * *

The Presidium of the U.S.S.R. Academy of Sciences struck a medal to commemorate the 150th anniversary of the birth of Charles Darwin, and the centenary of the publication of his work *The Origin of Species*. This medal has been awarded to a number of distinguished scientists and societies ; amongst those so honoured was Dr. Edward Hindle.

* * *

Due to a continuous guard, lasting nearly four months, organized by George Waterston, the Scottish representative of the Royal Society for the Protection of Birds, the pair of Ospreys that successfully reared three young ones at Loch Garten, Inverness-shire, last summer, has this year reared a further two. Such is the public interest in these magnificent birds that more than 20,000 people viewed them from the special look-out.

* * *

The breeding programme to prevent the Ne-ne from becoming extinct, initiated in 1949 by the Division of Fish and Game, U.S. Department of Agriculture and Conservation, is proving so successful that it has now been possible to release nineteen of these Geese at the Keauhou Sanctuary, near the Hawaii National Park. It is hoped that the Pohakuloa breeding station, where about sixteen breeding pairs will be kept, will be able to produce twenty-five to fifty birds annually for release in suitable areas.

* * *

Over 100 members and guests accepted the invitation of the Chairman and Council of the North of England Zoological Society to visit the Zoological Gardens, Chester, on 8th July, 1960. The Chairman of the Society, Mr. G. B. Groundsell, welcomed the visitors and presided at the lunch. Dr. Edward Hindle thanked the Chairman and Council on behalf of our members. While, perhaps somewhat

fortunately, it was not so hot as last year, the weather was ideal for walking round the Gardens which appeared to be at their very best. This is the fourth successive year that the Society has been invited to visit Chester Zoo and the warmest thanks of our members are due to the Director-Secretary, Mr. G. S. Mottershead, not only for making these annual visits possible but for organizing everything down to the last detail—thus ensuring maximum comfort and pleasure—so that the occasions are really memorable.

* * *

Gerald Iles reports of a recent visit to the New York Zoological Park : " I saw the six species of Flamingo—a wonderful show. I had, of course, never seen the Andean or James' before and was most impressed with them. The Toucans are, I think, the best lot I have ever seen and the new one, the Curly-headed Toucanette (*P. beauharnoisii*), was most spectacular. The Mossy-throated Bellbird was also interesting. Lee Crandall told me that many of the wattles have ' dropped off ' so that the ' shaggy-dog ' look has somewhat gone. The pair of Tacazze Sunbirds in the Jewel Hall have hatched a babe ! Amazing what they will do in a little glass-fronted cage with visitors tapping on the glass all the time. The chick hatched on Thursday, 7th July, and on Monday both parents were still feeding it. I did not see the chick as it was inside the large nest which had been introduced into the cage, but both parents were busy and the male was using up a lot of energy flying at the glass."

* * *

The breeding results of a very prolific pair of Mealy or Pale-headed Rosellas owned by D. Lievens, Moerzeke, Belgium, must be put on record.

1954	1st nest . . .	6 eggs, 6 young
	2nd ,, . .	4 ,, 4 ,,
1955	1st ,, . .	5 ,, 5 ,,
	2nd ,, . .	6 ,, 4 ,,

They were preparing to nest a third time so M. Lievens removed the nest-box.

1956	1st nest . .	6 eggs, 6 young
	2nd ,, . .	5 ,, 5 ,,
1957	1st ,, . .	6 ,, 5 ,,
	2nd ,, . .	7 ,, 7 ,,
1958	1st ,, . .	6 ,, 6 ,,
	2nd ,, . .	5 eggs plus two eggs of Pennant's, 4 young plus one Pennant's.
1959	1st nest . .	6 eggs, 6 young
	2nd ,, . .	4 ,, 3 ,,

Thus in six breeding seasons, sixty-one young plus one Pennant's have been reared.

1960	1st nest . .	5 eggs, 3 young plus four Pennant's.

Breeding reports. Albert Birtles, Rosella, three ; Bourke's, four ; Swinhoe's, sixteen from seventeen eggs ; Amherst's, four ; Ring-necked, three ; melanistic mutant, one. C. af Enehjelm, Helsingfors, Yellow-rumped Mannikin, second generation ; Bichenow's Finch, fourth generation. F. E. B. Johnson, Satyr Tragopan, nine hatched, " some of them still very small and by no means all reared yet ". John Moir, Manchester, Cockatiel, nine reared in one nest.

A. A. P.

* * *

EXHIBITION OF BIRD PAINTINGS

At the suggestion of the Reading Ornithological Club the Reading Art Gallery has made its galleries available for an Exhibition by Contemporary Bird Painters which is to be opened by Viscount Alanbrooke on Saturday, 26th November, at 3.0 p.m. It will remain open until 24th December. This is the first exhibition ever to be held which brings together the work of living British bird painters. Invitations have been sent to some American and continental artists and altogether over thirty artists will be represented by up to six works each.

* * *

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½ lb.	1/10½	½ lb.	2/–	3 oz.	10½d.	½ lb.	3/–	½ lb.	2/3
1 lb.	3/6	1 lb.	4/–	½ lb.	2/–	1 lb.	6/–	1 lb.	4/6
3½ lb.	11/9	3½ lb.	13/6	1 lb.	4/–	3½ lb.	21/–	3½ lb.	15/–
7 lb.	22/9	7 lb.	26/6	3½ lb.	13/6	7 lb.	38/8	7 lb.	29/9
28 lb.	85/–	28 lb.	98/–	7 lb.	26/6	28 lb.	154/–	28 lb.	112/–
				28 lb.	98/–				

C.L.O. Rearing and Condition Food				HEALTH GRAINS (Condition Seed)		"GREENSTUFF"
½ lb.	1/–	14 lb.	20/–	3 oz.	1/–	A dehydrated form of green food consisting of lettuce, spinach, carrot, etc., readily taken by all birds. Packets 1/– & 3/6, also sold in bulk.
1 lb.	2/–	28 lb.	38/6	1 lb.	4/6	
3½ lb.	5/6	56 lb.	75/–	3½ lb.	15/6	
7 lb.	10/6	1 cwt.	140/–	7 lb.	30/–	

When sending for above Birdfoods please add for part cost of postage :
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3/4	4/6	7/–	12/6	18/6	27/6

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	½ lb.	1 lb.
Dried Flies (Chinese)	5/–	9/6
Silkworm pupae ((Whole)	3/9	6/6
" " (Ground)	4/–	6/9
Dried Mayfly larvae (Whole)	6/6	12/6
" " " (Ground)	6/9	12/9
Dried Dragonfly larvae	6/6	12/6
Dried Shrimp (Fine, Medium, or Coarse)	2/3	3/6
Ant Eggs	6/6	12/6
Pure Dried Egg	6/6	12/6
Dried Rowan Berries (Whole)	2/9	4/6
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J. M. Colquhoun, Parish Line Road, Ardmore, Papakura, R.D. 2, Auckland, New Zealand.

F. Davies, 27 Dorset Road, Tuebrook, Liverpool 6.

NEW MEMBERS

The forty Candidates for Election in the July–August, 1960, number of the *Avicultural Magazine* were duly elected members of the Society.

CHANGES OF ADDRESS

Robert W. Ficken, to Laboratory of Ornithology, Ithaca, N.Y., U.S.A.

G. W. Foster, to 116B. Church Street, Eastwood, Notts.

L. L. Gordon, to Route 2, Box 2058, Grass Valley, Calif., U.S.A.

Richard A. Graham, to 5114 Angelescrest Hwy, La Canada, Calif., U.S.A.

J. E. Mason-Wenn, to Badgworth, Nr. Axbridge, Somerset.

Jan Roger van Oosten, to 801 N. Yakima, Tacoma, Washington, U.S.A.

T. R. Plumb, to The Tropical Shop, 376 Stretford Road, Manchester 15.

Aubrey N. C. Thorp, to c/o Department of Agriculture, P.O. Box 10, Mahalapye, Bechuanaland Protectorate, South Africa.

Mark Vinson, to Shute Cottage, Kellaton, Kingsbridge, S. Devon.

Henry Wallace, to 6 Palmers Avenue, Grays, Essex.

Mrs. James M. Wiship, to 20930 Laguna Canyon Road, Laguna Beach, Calif., U.S.A.

S. H. Woods, to 29 Craigwell Avenue, Aylesbury, Bucks.

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